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UK METEOROLOGICAL OFFICE
GLOBAL DATA MONITORING REPORT

November 2001

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1. Introduction

As the WMO-appointed lead centre for monitoring surface marine data, the U.K. Meteorological Office produces monthly statistics on the quality of these observations received at RSMC Bracknell. This report includes this information along with statistics for most other types of data. The figures and tables contained herein are presented according to the agreed standards for the exchange of monitoring results.

The report is based on data received at the UK Meteorological Office Headquarters, Bracknell in time for inclusion into the appropriate analysis (the current cut-off time is approximately 7.2 hours after each analysis time). The evaluation of data quality is based on comparison with the appropriate 6-hour global model forecast (background field). Generally, the background field is of high quality except in data sparse areas, tropical regions and areas close to steep orography where care should be taken in interpreting the statistics shown.

Comments or queries on the report are welcome and should be addressed to:-

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2 Global Data Monitoring Statistics

Ships, Fixed buoys, Platforms and Drifting buoys observations

TABLES 1and 2 contain lists of the stations which are considered to have returned suspect observations of pressure, windspeed, wind direction or sea surface temperature, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 1 and 2 show 10 degree lat/long box average numbers of SHIP/SYNOP and DRIFTER observations received per day throughout the month at Bracknell and assimilated into model runs. Only data from the main hours of 00 UTC, 06 UTC, 12UTC and 18 UTC are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Synop Observations

Table 3 contains a list of stations which are considered to have returned suspect observations of Pressure during the month. The criteria for quality control are given in the header page. The reporting practice of each station is included in the list of statistics.

At the UK Met. Office, we monitor SYNOP pressure after it has been interpolated to our Global NWP Model's surface height. For most synoptic stations (about 75%), the surface pressure (at the model surface) is calculated from the reported station-level pressure, or, if this is not available, the height of a standard pressure-level (e.g. 850 hPa or 700 hPa). If neither of these are available, or if the reported station-level pressure is deemed unreliable, the reported mean sea-level pressure is used (about 25% of SYNOPs).

Aircraft observations

Tables 4A (300-150 hPa) and 4B (1000-301 hPa) contain lists of statistics calculated from data received from all airline carriers.

Figures 3A (300-150 hPa) and 3B (1000-301 hPa) show 10 degree lat/long box average numbers of aircraft reports in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS) received per day throughout the month at Bracknell and assimilated into model runs. Observations with a vector wind difference (compared with the model background field) of >60 m s^{-1} have been excluded. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Figures 4A-7A (300-150 hPa) and 4B-7B (1000-301 hPa) show wind statistics for AIREP/ASDAR in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS). Observations with a vector wind difference > 60 m s^{-1} have been excluded. Statistics have not been calculated for 10 degree lat/long boxes containing <31 observations.

Figure	Parameter
4	Mean wind vectors
5	Mean observation - background wind vector
6	Mean observation-background speed (m s^{-1})
7	RMS observation-background vector (m s^{-1})

Radiosonde Observations

TABLES 5-7 contain lists of the stations which are considered to have returned suspect observations of geopotential height, vector wind or wind direction, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 8 and 9 show 10 degree lat/long box average numbers of TEMP 500 hPa GEOPOTENTIAL HEIGHT and TEMP/PILOT 300 hPa WIND observations received per day throughout the month at Bracknell and assimilated into model runs. Data from all hours are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

APPENDIX I shows details of the gross error limits used in TABLES 5 and 6 and the weights used in the RMS values in TABLE 5.

Satellite Observations

Figures 10-24 show satellite wind statistics for all geostationary satellites. All plots other than **AVAILABILITY** show average data where there are > 10 observations in a 10 degree lat/long box.

Figure	Parameter Plotted	Layer (hPa)
10	Availability/average daily number	701-1000
11	Vector mean wind (observed)	701-1000
12	Observation-background vector wind difference	701-1000
13	Mean observation-background speed differences	701-1000
14	RMS observation-background vector difference	701-1000
15	Availability/average daily number	401-700
16	Vector mean wind (observed)	401-700
17	Observation-background vector wind difference	401-700
18	Mean observation-background speed differences	401-700
19	RMS observation-background vector difference	401-700
20	Availability/average daily number	101-400
21	Vector mean wind (observed)	101-400
22	Observation-background vector wind difference	101-400
23	Mean observation-background speed differences	101-400
24	RMS observation-background vector difference	101-400

Figures 25-39 show sounding statistics from the polar orbitting satellite NOAA-15. Figure 25 shows the mean daily number of ATOVS soundings, and figures 26-39 show mean and standard deviation observation-background differences for brightness temperature, for selected channels.
N.B. The sounding data is bias-corrected (and thinned) before being assimilated in the UKMO NWP model.

Figure		Weighting function peak (hPa)
26	Mean	Surface (HIRS8)
27	SD	Surface (HIRS8)
28	Mean	700 (HIRS15)
29	SD	700 (HIRS15)
30	Mean	500-700 (HIRS11)
31	SD	500-700 (HIRS11)
32	Mean	400 (HIRS4)
33	SD	400 (HIRS4)
34	Mean	700 (AMSUA5)
35	SD	700 (AMSUA5)
36	Mean	300 (AMSUA7)
37	SD	300 (AMSUA7)
38	Mean	100 (AMSUA9)
39	RMS	100 (AMSUA9)

Figures 40-54 show sounding statistics from the polar orbitting satellite NOAA-16. Figure 40 shows the mean daily number of ATOVS soundings, and figures 41-54 show mean and standard deviation observation-background differences for brightness temperature, for selected channels.
N.B. The sounding data is bias-corrected (and thinned) before being assimilated in the UKMO NWP model.

Figure		Weighting function peak (hPa)
41	Mean	Surface (HIRS8)
42	SD	Surface (HIRS8)
43	Mean	700 (HIRS15)
44	SD	700 (HIRS15)
45	Mean	500-700 (HIRS11)
46	SD	500-700 (HIRS11)
47	Mean	400 (HIRS4)
48	SD	400 (HIRS4)
49	Mean	700 (AMSUA5)
50	SD	700 (AMSUA5)
51	Mean	300 (AMSUA7)
52	SD	300 (AMSUA7)
53	Mean	100 (AMSUA9)
54	RMS	100 (AMSUA9)

3 Composite Observing Systems for the North Atlantic (COSNA)

This section shows statistics for upper air (radiosonde and aircraft) and surface (drifter) data for the North Atlantic area for data received at Bracknell during the month.

TABLE 8 shows quality statistics for **Mean Sea-level Pressure, Windspeed and Wind Direction** received at Bracknell in DRIFTER code during the month for the area 10°N - 80°N, 85°W - 0°W.

TABLE 9 shows quality statistics for **Temperature and Vector Wind** received at Bracknell from aircraft during the month for the area 40°N - 70°N, 60°W - 0°W.

Table 10 - 13 show quality statistics (**Geopotential Height and Windspeed at 100 and 500 hPa**) for all TEMPSHIPS in the area bounded by 0°N - 90°N, 100°W - 40°E and selected TEMP stations within the same area.

Revisions

1. May 95 Monitoring statistics for NOAA-11 removed. Figures 25-27 now show data for NOAA-12
2. May 95 Notes giving details of observations included in wind direction statistics clarified and corrected.
3. August 95 Monitoring statistics for NOAA-14 added with figures 28-30.
4. February 96 Monitoring statistics for GOES-7 have been replaced by statistics for GOES-8 and GOES-9.
5. April 96. 500 km and 120 km SATEMs replaced by 120 km resolution temperature profiles produced locally from the radiances disseminated by NESDIS.
6. February 97 Monitoring statistics for Meteosat 5 have been replaced by statistics for Meteosat 6.
7. Sept 97 Monitoring statistics for NOAA-12 removed. Figures 25-27 now show data for NOAA-11
8. January 1998. Increase in resolution of UKMO global forecast model.
9. April 1998. GOES winds ceased on 2nd March 1998, and were replaced with GOES high resolution winds from 15th.
10. June 1998. Monitoring statistics for Meteosat-6 were replaced by monitoring statistics for Meteosat-7, from 3rd June.
11. June 1998. Corrections in our processing of radiosonde data resulted in a decrease in the number of 500hPa geopotential heights in Figure 8 of about 230 per 24 hours (compared with previous reports), and a small increase in the number of 300hPa winds in Figure 9.
12. July 1998. Meteosat-5 began transmitting winds from 2nd July, at 63 degrees East (over the Indian ocean), and this data is included in the statistics.
13. July 1998. GOES-9 (at 135W) was replaced mid-month by GOES-10 (initially at 105W, moving towards 135W).
14. February 1999. Problems with NOAA-11, and TOVS data ceased to be assimilated from 26 February.
15. March 1999. UKMO introduced 3-D VAR assimilation system on 29 March, and also began assimilating ATOVS data from NOAA-15.
16. May 1999. Included statistics for ATOVS sounding data from NOAA-15.
17. September 1999. Included statistics for high resolution visible winds from Meteosat-5 and Meteosat-7.
18. October 1999. The 3-D VAR assimilation system was upgraded on 19 October, including improvements in the assimilation of ATOVS radiances, use of SSM/I surface wind speed, an improvement in the calculation of surface pressure for SYNOPs, and thinning and revision of observation errors of aircraft data.
19. November 1999. High resolution visible winds from Meteosat-5 and Meteosat-7 removed until used operationally.
20. April 2000. Aireps in Table 4 and Figures 3-7 split into ranges 300-150 hPa (A) and 1000-301 hPa (B).
21. September 2000. Corrected an error affecting the mean positions of a minority of buoys in Table 2.
22. November 2000. An error in the production of Table 6 was corrected. Previously, some sondes with suspect vector winds were being missed.
23. April 2001. Included statistics for ATOVS sounding data from NOAA-16.
24. May 2001. Included statistics for sea surface temperatures from marine surface observations.

TABLE 1

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS
MONITORING CENTRE: BRACKNELL
MONTH: November 2001

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for ships, fixed buoys and platforms.

Standard of comparison :Background field from UKMO global model.

Observation times :00, 06, 12, 18 UTC

Elements monitored
:Mean sea level pressure (hPa).
:Wind speed (m s^{-1}).
:Wind direction (Degrees).
:Sea surface temperature (Degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. a positive bias indicates the wind observation is veered to the background.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT
:15 hPa (pressure)
:25 m s^{-1} (vector wind)
:10 degrees (sea surface temperature)

SELECTION CRITERIA :NOBS $\geq$ 20 , and one or more of the following:

1.|bias|
$\geq$ 4 hPa (pressure),
$\geq$ 5 m s^{-1} (wind speed),
$\geq$ 30 degrees (direction).
$\geq$ 3 degrees (sea surface temperature).

2.SD
$\geq$ 6 hPa (pressure),
$\geq$ 80 degrees (direction).
$\geq$ 5 degrees (sea surface temperature).

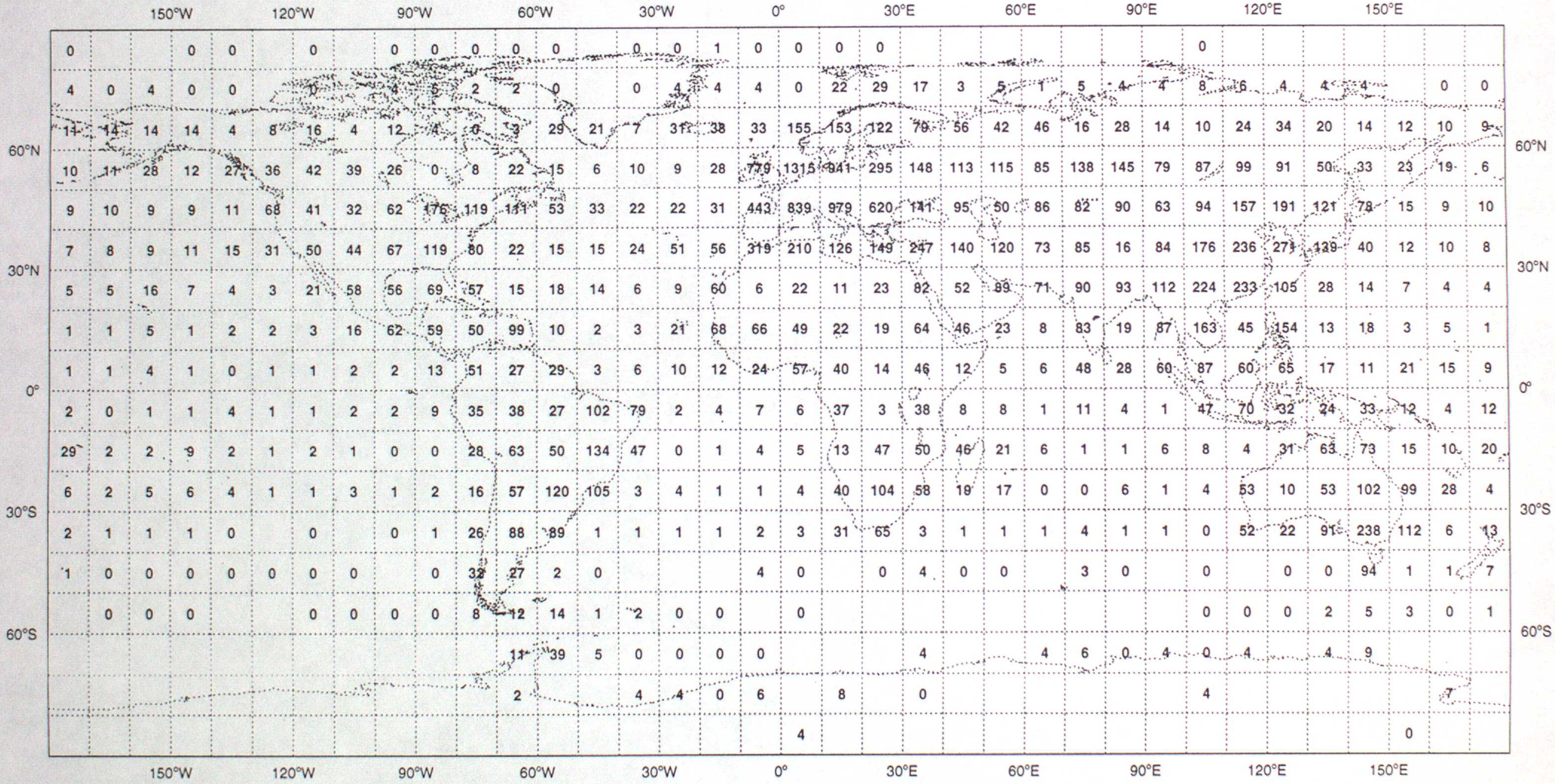
3.PGE $\geq$ 25

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE									
CGDS	ALL	P	SUR	131	1	1	4.6	10.6	11.6
C6KE3	ALL	P	SUR	24	0	0	2.2	-4.0	4.6
C6LU3	ALL	P	SUR	36	0	0	1.5	6.6	6.7
C6QK	ALL	P	SUR	33	0	0	2.2	5.4	5.8
C6QY4	ALL	P	SUR	24	0	0	1.9	-4.5	4.8
FGTO	ALL	P	SUR	23	4	17	7.4	0.7	7.4
KCBH	ALL	P	SUR	49	0	0	1.9	-4.3	4.7
KS002	ALL	P	SUR	99	22	22	8.3	0.8	8.3
KS004	ALL	P	SUR	37	2	5	4.2	4.4	6.1
MVLA7	ALL	P	SUR	47	0	0	1.6	10.5	10.6
P3YS5	ALL	P	SUR	57	0	0	1.4	4.2	4.4
SHIPEE	ALL	P	SUR	21	7	33	1.7	-1.1	2.0
UACU	ALL	P	SUR	29	5	17	2.3	4.1	4.7
UBAU	ALL	P	SUR	20	0	0	1.4	-5.0	5.1
UCJL	ALL	P	SUR	32	0	0	1.6	5.6	5.8
UFNO	ALL	P	SUR	21	7	33	1.1	5.6	5.7
VCJM	ALL	P	SUR	29	29	100			
VGDX	ALL	P	SUR	40	3	7	0.7	-4.1	4.2
VNW4455	ALL	P	SUR	22	0	0	2.6	5.1	5.7
VRVI2	ALL	P	SUR	28	0	0	0.6	6.1	6.2
VVMA	ALL	P	SUR	21	1	5	1.9	10.7	10.9
VYNG	ALL	P	SUR	27	19	70	0.7	2.5	2.6
V7BW9	ALL	P	SUR	45	0	0	1.6	-4.6	4.9
WCV7620	ALL	P	SUR	27	0	0	0.9	4.5	4.6
3ERU8	ALL	P	SUR	21	7	33	3.0	-1.0	3.2
4XGV	ALL	P	SUR	33	1	3	1.5	6.2	6.4
62151	ALL	P	SUR	25	0	0	2.9	7.0	7.5
9VHZ2	ALL	P	SUR	56	0	0	2.5	-4.2	4.9
WIND SPEED									
C6KD8	ALL	SPEED	SUR	67	1	1	5.2	5.3	7.5
C6NI3	ALL	SPEED	SUR	31	0	0	2.7	5.7	6.3
DHDH	ALL	SPEED	SUR	39	1	3	4.8	5.8	7.6
ELJW2	ALL	SPEED	SUR	56	1	2	5.2	5.4	7.5
GBRY	ALL	SPEED	SUR	26	0	0	5.5	7.8	9.5
MXBC6	ALL	SPEED	SUR	48	0	0	4.2	5.1	6.6
OWRN2	ALL	SPEED	SUR	58	0	0	5.0	11.7	12.8
SXYY	ALL	SPEED	SUR	29	1	3	4.9	8.7	10.0
VCLM	ALL	SPEED	SUR	145	37	26	4.3	4.0	5.9
VOCJ	ALL	SPEED	SUR	162	11	7	5.8	8.9	10.7
WRYG	ALL	SPEED	SUR	64	3	5	5.7	6.3	8.4
3ESP7	ALL	SPEED	SUR	60	1	2	4.9	9.1	10.4
9MBK8	ALL	SPEED	SUR	23	0	0	4.5	9.1	10.2
9MBW	ALL	SPEED	SUR	33	0	0	7.2	11.2	13.3
WIND DIRECTION									
BBXX KS0	ALL	DIRN.	SUR	96	19	20	92.2	39.2	100.2
DBBI	ALL	DIRN.	SUR	25	0	0	98.8	-34.9	104.8
KS000	ALL	DIRN.	SUR	43	10	23	82.8	18.9	84.9
KS004	ALL	DIRN.	SUR	113	29	26	99.1	6.0	99.2
KS005	ALL	DIRN.	SUR	26	0	0	63.1	39.9	74.6
VCLM	ALL	DIRN.	SUR	65	37	57	79.0	-54.3	95.9
52073	ALL	DIRN.	SUR	37	0	0	144.4	56.5	155.1
62131	ALL	DIRN.	SUR	68	0	0	12.1	34.6	36.6
SEA SURFACE TEMPERATURE									
AVOSTEST	ALL	SST	SUR	94	94	100			
CGDS	ALL	SST	SUR	131	59	45	0.6	0.1	0.6
CG8048	ALL	SST	SUR	28	28	100			
C6MS4	ALL	SST	SUR	38	0	0	1.2	-3.7	3.9
C6QO9	ALL	SST	SUR	35	0	0	1.0	3.8	3.9

IDENTIFIER	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
SEA SURFACE TEMPERATURE									
ELJQ2	ALL	SST	SUR	39	0	0	1.5	3.1	3.5
ELKU8	ALL	SST	SUR	24	0	0	0.9	3.3	3.4
ELTS6	ALL	SST	SUR	28	3	11	2.7	5.0	5.7
H9GW	ALL	SST	SUR	43	0	0	1.4	4.3	4.5
JADY	ALL	SST	SUR	126	0	0	0.8	5.0	5.0
KRPB	ALL	SST	SUR	32	0	0	0.9	-4.4	4.5
KS005	ALL	SST	SUR	52	15	29	1.4	-2.1	2.5
LAON4	ALL	SST	SUR	60	21	35	2.2	3.8	4.3
MZNM7	ALL	SST	SUR	47	0	0	1.2	-3.6	3.8
PDIU	ALL	SST	SUR	22	0	0	1.2	-5.5	5.7
PDYV	ALL	SST	SUR	20	0	0	0.5	-3.1	3.2
PJOX	ALL	SST	SUR	26	0	0	0.5	-4.3	4.3
TSMS	ALL	SST	SUR	39	0	0	1.6	-5.9	6.1
UBDN	ALL	SST	SUR	37	0	0	2.7	-3.6	4.5
UCUP	ALL	SST	SUR	38	0	0	1.5	-3.2	3.5
UFHG	ALL	SST	SUR	28	0	0	2.3	-4.3	4.9
VGLZ	ALL	SST	SUR	40	40	100			
VRUL7	ALL	SST	SUR	38	0	0	0.9	-3.2	3.3
WBHU	ALL	SST	SUR	33	0	0	1.4	3.9	4.2
WCW9126	ALL	SST	SUR	32	31	97	0.0	-5.0	5.0
WGLA	ALL	SST	SUR	34	0	0	2.0	-4.3	4.8
ZCB05	ALL	SST	SUR	58	0	0	2.2	-3.6	4.2
ZQAY4	ALL	SST	SUR	33	0	0	1.3	-4.1	4.3
3FD06	ALL	SST	SUR	45	0	0	0.6	6.6	6.6
3FHX8	ALL	SST	SUR	28	2	7	2.8	-3.0	4.1
45139	ALL	SST	SUR	350	0	0	0.8	-5.0	5.1
45145	ALL	SST	SUR	81	81	100			
45147	ALL	SST	SUR	667	667	100			
46131	ALL	SST	SUR	719	719	100			
46146	ALL	SST	SUR	718	718	100			
46181	ALL	SST	SUR	717	717	100			
8PNI	ALL	SST	SUR	26	0	0	1.7	3.0	3.4

Figure 1. SHIP/SYNOP mean daily count. NOVEMBER 2001
Main hours only
Global average number of observations in 24 hours = 21604



0			0	0		0		0	0	0	0	0		0	0	1	0	0	0	0								0							
4	0	4	0	0		0		4	5	2	2	0		0	4	4	4	0	22	29	17	3	5	1	5	4	4	8	6	4	4	4		0	0
11	14	14	14	4	8	16	4	12	4	0	3	29	21	7	31	38	33	155	153	122	79	56	42	46	16	28	14	10	24	34	20	14	12	10	9
10	11	28	12	27	36	42	39	26	0	8	22	15	6	10	9	28	779	1315	941	295	148	113	115	85	138	145	79	87	99	91	50	33	23	19	6
9	10	9	9	11	68	41	32	62	176	119	111	53	33	22	22	31	443	839	979	620	141	95	50	86	82	90	63	94	157	191	121	78	15	9	10
7	8	9	11	15	31	50	44	67	119	80	22	15	15	24	51	56	319	210	126	149	247	140	120	73	85	16	84	176	236	271	139	40	12	10	8
5	5	16	7	4	3	21	58	56	69	57	15	18	14	6	9	60	6	22	11	23	82	52	89	71	90	93	112	224	233	105	28	14	7	4	4
1	1	5	1	2	2	3	16	62	59	50	99	10	2	3	21	68	66	49	22	19	64	46	23	8	83	19	87	163	45	154	13	18	3	5	1
1	1	4	1	0	1	1	2	2	13	51	27	29	3	6	10	12	24	57	40	14	46	12	5	6	48	28	60	87	60	65	17	11	21	15	9
2	0	1	1	4	1	1	2	2	9	35	38	27	102	79	2	4	7	6	37	3	38	8	8	1	11	4	1	47	70	32	24	33	12	4	12
29	2	2	9	2	1	2	1	0	0	28	63	50	134	47	0	1	4	5	13	47	50	46	21	6	1	1	6	8	4	31	63	73	15	10	20
6	2	5	6	4	1	1	3	1	2	16	57	120	105	3	4	1	1	4	40	104	58	19	17	0	0	6	1	4	53	10	53	102	99	28	4
2	1	1	1	0		0		0	1	26	88	89	1	1	1	1	2	3	31	65	3	1	1	1	4	1	1	0	52	22	91	238	112	6	13
1	0	0	0	0	0	0	0		0	32	27	2	0				4	0		0	4	0	0		3	0		0		0	0	94	1	1	7
	0	0	0			0	0	0	0	8	12	14	1	2	0	0		0										0	0	0	2	5	3	0	1
											11	39	5	0	0	0	0				4			4	6	0	4	0	4		4	9			
											2			4	4	0	6		8		0							4						7	
																		4															0		

TABLE 2

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - DRIFTING BUOYS
MONITORING CENTRE: BRACKNELL
MONTH: November 2001

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for drifting buoys.
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Mean sea level pressure (hPa). :Wind speed ($m\ s^{-1}$). :Wind direction (degrees). :Sea surface temperature (degrees).
Parameters monitored	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. a positive bias indicates the wind observation is veered to the background.**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT	:15 hPa	(pressure)	
	:25 $m\ s^{-1}$	(vector wind)	
	:10 degrees	(sea surface temperature)	
SELECTION CRITERIA :	NOBS	≥ 20 , and one or more of the following:	
	1.|bias|	≥ 4 hPa	(pressure),
		≥ 5 $m\ s^{-1}$	(wind speed),
		≥ 30 degrees	(direction).
		≥ 3 degrees	(sea surface temperature).
	2.SD	≥ 6 hPa	(pressure),
		≥ 80 degrees	(direction).
		≥ 5 degrees	(sea surface temperature).
	3.PGE	≥ 25.	

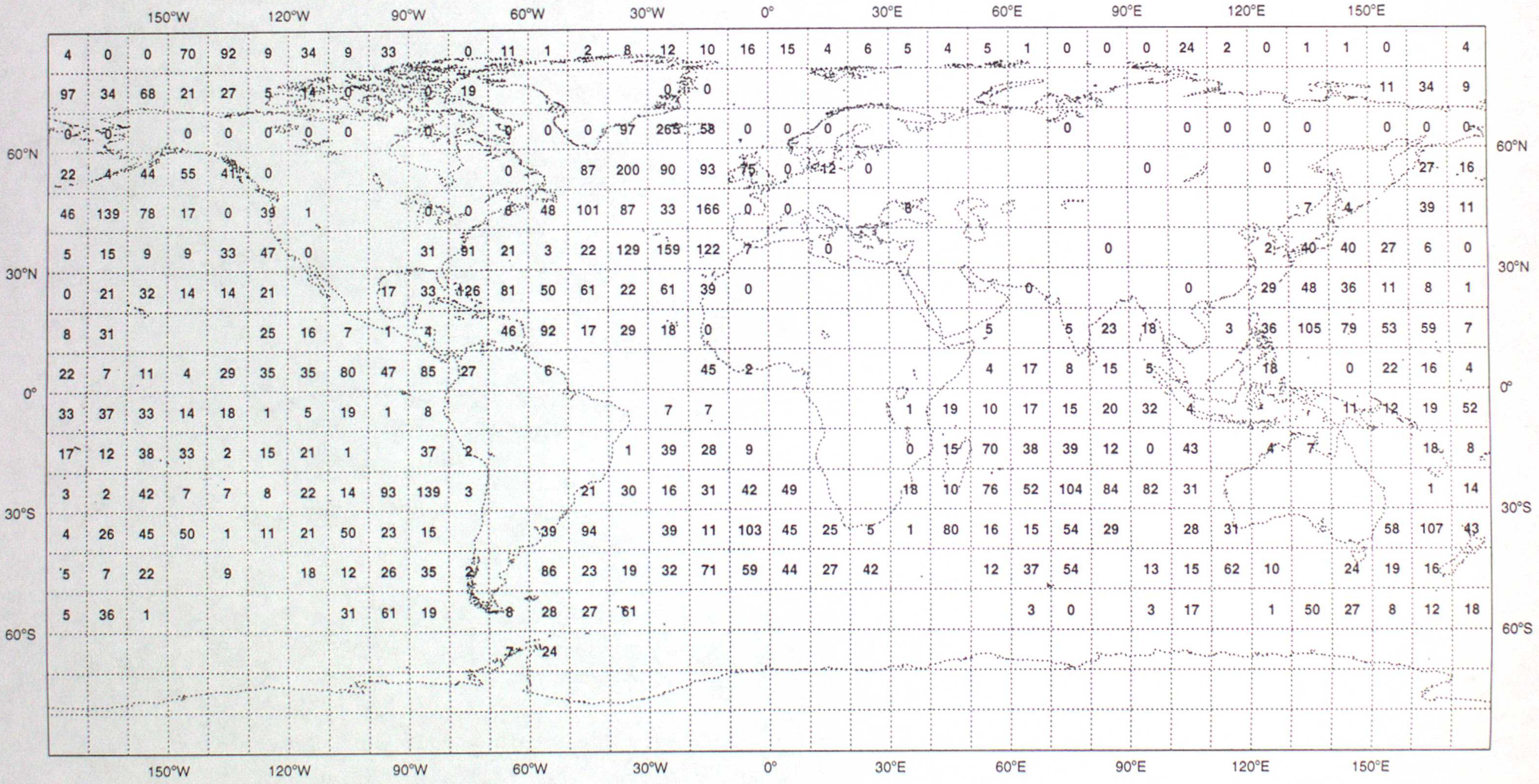
N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 $m\ s^{-1}$

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
25541	81.1	108.2	ALL	P	SUR	733	123	17	7.1	2.1	7.4
25551	88.9	-80.2	ALL	P	SUR	470	284	60	7.5	-5.6	9.3
44722	35.1	-34.6	ALL	P	SUR	194	85	44	0.7	-0.5	0.9
62510	41.4	-17.8	ALL	P	SUR	24	15	63	1.5	-12.9	13.0
WIND SPEED											
41651	24.3	-75.4	ALL	SPEED	SUR	116	0	0	2.3	-9.5	9.8
WIND DIRECTION											
62520	53.5	-20.1	ALL	DIRN.	SUR	180	0	0	20.5	-36.6	42.0
SEA SURFACE TEMPERATURE											
16530	-46.0	77.5	ALL	SST	SUR	173	0	0	0.6	3.3	3.3
22511	19.3	120.8	ALL	SST	SUR	135	0	0	0.6	4.0	4.1
22512	32.3	135.7	ALL	SST	SUR	138	0	0	0.8	5.5	5.5
22513	28.0	128.5	ALL	SST	SUR	111	0	0	0.8	4.3	4.4
22514	32.0	134.5	ALL	SST	SUR	133	0	0	0.3	5.5	5.5
31973	-41.2	-52.6	ALL	SST	SUR	147	0	0	3.2	3.1	4.5
32529	-10.4	42.6	ALL	SST	SUR	117	104	89	0.3	-5.4	5.4
33502	-25.1	-25.2	ALL	SST	SUR	106	0	0	0.9	4.3	4.4
43516	7.2	-112.4	ALL	SST	SUR	42	20	48	2.7	6.2	6.7
43559	-1.0	-80.7	ALL	SST	SUR	24	0	0	0.2	-6.8	6.8
46972	26.5	-125.7	ALL	SST	SUR	211	0	0	0.3	3.3	3.4
51620	18.3	132.4	ALL	SST	SUR	240	87	36	0.2	-0.4	0.5
51823	-11.5	165.7	ALL	SST	SUR	191	123	64	0.3	0.0	0.3
55912	-37.2	169.9	ALL	SST	SUR	535	1	0	1.4	3.8	4.0
56552	-22.9	104.5	ALL	SST	SUR	149	149	100			
62519	42.2	-13.2	ALL	SST	SUR	50	1	2	0.4	6.4	6.4

Figure 2. DRIFTER mean daily count. NOVEMBER 2001

Main hours only

Global average number of observations in 24 hours = 9732



4	0	0	70	92	9	34	9	33		0	11	1	2	8	12	10	16	15	4	6	5	4	5	1	0	0	0	24	2	0	1	1	0		4
97	34	68	21	27	5	14	0		0	19					0	0																	11	34	9
0	0		0	0	0	0	0		0		0	0	0	97	265	58	0	0	0						0			0	0	0	0		0	0	0
22	4	44	55	41	0						0		87	200	90	93	75	0	12	0							0			0				27	16
46	139	78	17	0	39	1			0	0	6	48	101	87	33	166	0	0			8										7	4		39	11
5	15	9	9	33	47	0			31	91	21	3	22	129	159	122	7		0							0				2	40	40	27	6	0
0	21	32	14	14	21			17	33	126	81	50	61	22	61	39	0							0				0		29	48	36	11	8	1
8	31				25	16	7	1	4		46	92	17	29	18	0							5		5	23	18		3	36	105	79	53	59	7
22	7	11	4	29	35	35	80	47	85	27		6				45	2						4	17	8	15	5			18		0	22	16	4
33	37	33	14	18	1	5	19	1	8						7	7					1	19	10	17	15	20	32	4				11	12	19	52
17	12	38	33	2	15	21	1		37	2				1	39	28	9				0	15	70	38	39	12	0	43		4	7			18	8
3	2	42	7	7	8	22	14	93	139	3			21	30	16	31	42	49			18	10	76	52	104	84	82	31						1	14
4	26	45	50	1	11	21	50	23	15			39	94		39	11	103	45	25	5	1	80	16	15	54	29		28	31				58	107	43
5	7	22		9		18	12	26	35	2		86	23	19	32	71	59	44	27	42			12	37	54		13	15	62	10		24	19	16	
5	36	1					31	61	19		8	28	27	61										3	0		3	17		1	50	27	8	12	18
											7	24																							

TABLE 3

MONITORING OF LAND SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SYNOPS & AUTOSYNOPS
MONITORING CENTRE: BRACKNELL
MONTH: November 2001

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for synops & autosynops.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Surface pressure (hPa).
Parameters monitored	:HT(m)	:Station height (in metres) as given in WMO No. 9 Vol A
	:RP	:Pressure reporting practice M=mean sea level pressure (hPa) reported. S=Station level pressure reported. 8=Geopotential height (m) of 850 hPa surface reported. 7=Geopotential height (m) of 700 hPa surface reported.
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	:Percentage of observations flagged excluding those with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT	:15 hPa	(pressure)
SELECTION CRITERIA	:NOBS	≥ 20 ,and one or more of the following:
	1.|bias|	≥ 4 hPa
	2. SD	≥ 6 hPa
	3.PGE	≥ 25.

N.B. For stn ht ≥ 500m, mslp is that calculated from station level pressure where available.
For stn ht < 500m, mslp is that as reported by the station where available.

WMO REGION 1:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
60437	36.3N	2.8E	981	S8	70	0	0	0	0.8	-7.4	7.4
60476	35.4N	7.2E	1116	S8	65	30	46	0	0.9	13.5	13.5
60728	36.4N	10.7E	1	MS	71	0	0	61	0.7	-8.6	8.6
62790	12.1N	24.9E	674	MS	73	1	1	5	2.4	4.1	4.8
63170	9.5N	44.1E	1326	M	23	0	0	13	2.5	6.9	7.3
63175	9.5N	45.6E	1032	M	21	0	0	5	2.1	6.7	7.0
63333	11.1N	39.7E	1903	MS	48	0	0	0	0.6	5.4	5.4
63334	10.3N	37.7E	2515	MS	45	1	2	0	1.0	10.6	10.6
63402	7.7N	36.8E	1725	M	40	0	0	3	1.6	8.0	8.2
63450	9.0N	38.8E	2354	MS	25	0	0	0	0.4	4.3	4.3
63453	8.9N	39.9E	930	S	43	0	0	2	1.4	-4.2	4.4
63471	9.6N	41.9E	1260	MS	46	0	0	2	1.3	10.1	10.2
63478	5.9N	43.6E	295	MS	44	0	0	0	0.5	5.2	5.2
63680	0.3N	32.6E	1144	S	36	0	0	0	0.5	-7.6	7.6
65355	9.8N	1.1E	342	MS	101	0	0	67	2.5	-12.3	12.6
67250	15.6S	32.8E	882	S8	54	52	96	0	1.7	1.1	2.0
68030	18.5S	25.6E	1071	8	81	0	0	0	1.2	4.9	5.0
68038	20.5S	26.0E	903	8	77	0	0	3	1.6	4.2	4.5
68396	26.5S	31.3E	641	S8	56	1	2	0	1.0	4.6	4.7
68530	29.1S	23.8E	994	S8	27	0	0	0	2.9	4.4	5.3
68575	30.0S	30.0E	1175	S8	119	119	100	0			
68668	31.5S	28.7E	743	M	76	34	45	0	2.2	1.5	2.7

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
24671	63.9N	135.9E	402	MS	109	4	4	42	3.5	6.0	6.9
24688	63.3N	143.2E	741	MS	119	5	4	49	4.8	6.3	7.9
30554	54.5N	113.6E	995	MS	120	0	0	0	4.7	5.2	7.0
30967	49.9N	115.8E	623	MS	90	0	0	0	1.3	-7.1	7.2
36096	51.7N	94.5E	628	M	120	1	1	53	3.3	6.3	7.1
40726	36.8N	45.7E	1384	MS	101	0	0	0	0.9	4.0	4.1
40741	36.6N	61.2E	235	MS	108	1	1	1	1.5	-4.6	4.8
40757	35.6N	53.4E	1171	MS	107	0	0	5	1.6	5.0	5.2
41254	23.1N	57.7E	1755	S8	86	86	100	0			
41314	17.7N	54.0E	467	MS	116	0	0	0	0.5	4.0	4.0
41396	16.0N	48.9E	700	MS	36	1	3	0	0.8	6.9	6.9
41466	13.7N	44.1E	1402	8	52	0	0	2	0.8	-5.9	6.0
44416	28.6N	81.6E	720	MS	76	1	1	0	1.1	4.7	4.8
47022	40.8N	128.2E	1200	S	97	2	2	1	1.0	5.0	5.1
47127	36.9N	127.0E	16	MS	120	0	0	0	0.8	-11.8	11.8
51334	44.6N	82.9E	321	M	120	0	0	43	2.4	4.2	4.8
51495	43.5N	91.6E	874	M	119	3	3	17	1.8	10.0	10.2
51818	37.6N	78.3E	1376	M	120	0	0	13	2.2	4.1	4.7
52602	38.8N	93.4E	2734	S	120	0	0	0	1.1	-5.9	6.0
52866	36.6N	101.8E	2262	S	120	0	0	0	0.8	-4.7	4.8
52955	35.6N	100.8E	3201	S	120	0	0	0	0.6	12.6	12.6
53352	41.7N	110.4E	1377	M	120	0	0	28	2.2	4.1	4.7
54587	39.1N	123.2E	-87	M	119	0	0	1	1.3	-4.1	4.3
56144	31.8N	98.6E	3184	S	120	0	0	1	1.2	-4.6	4.8
56146	31.6N	100.0E	339	S	120	120	100	0			
56385	29.5N	103.3E	3049	S	120	0	0	13	2.2	-4.5	5.0
56444	28.5N	98.9E	3488	S	120	79	66	59	0.6	13.8	13.8
56462	29.0N	101.5E	2994	S	120	0	0	0	1.5	9.3	9.4

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
80099	7.1N	70.7W	128	MS	42	0	0	0	1.3	-6.4	6.5
80437	8.6N	71.7W	103	MS	31	0	0	0	1.6	4.6	4.9
82181	2.0S	54.1W	146	MS	83	0	0	0	1.5	6.4	6.6
82765	7.3S	47.5W	193	MS	79	0	0	0	0.9	4.9	5.0
83235	12.4S	46.4W	604	MS	88	0	0	2	1.6	7.5	7.7
83319	14.7S	52.4W	315	MS	88	0	0	0	1.2	4.9	5.0
83332	14.1S	46.4W	826	MS	85	43	51	0	0.8	13.8	13.8
83361	15.6S	56.1W	151	MS	83	0	0	0	1.4	4.8	5.0
83408	14.3S	43.8W	447	MS	80	4	5	0	0.9	12.4	12.4
83488	17.8S	42.9W	1097	MS	88	88	100	0			
83531	18.6S	46.5W	940	MS	87	0	0	0	0.8	-6.3	6.4
83587	19.9S	43.9W	850	MS	87	1	1	2	1.2	-7.4	7.5
83773	23.1S	48.9W	793	MS	89	0	0	0	0.9	-4.0	4.1
83836	25.5S	50.6W	837	MS	88	0	0	1	2.1	-4.9	5.3
83953	30.9S	55.5W	231	MS	87	1	1	0	1.4	-10.3	10.4
84377	3.8S	73.3W	125	MS	106	0	0	0	1.3	4.6	4.8
84425	5.9S	76.1W	179	MS	22	0	0	0	1.3	5.5	5.7
84455	6.5S	76.4W	281	MS	80	0	0	0	1.3	7.7	7.8
84472	7.1S	78.5W	2620	S	48	0	0	0	0.6	-5.5	5.5
84474	7.2S	76.7W	350	S	20	1	5	5	1.2	11.0	11.1
84501	8.1S	79.0W	26	MS	83	0	0	0	0.7	4.3	4.4
84686	13.6S	72.0W	3248	S	109	0	0	0	1.0	-4.5	4.6
84688	13.7S	73.4W	3444	S	45	0	0	0	0.6	-13.1	13.1
84720	14.9S	75.0W	567	MS	52	0	0	0	0.9	5.1	5.2
84782	18.1S	70.3W	468	MS	84	0	0	0	1.3	9.1	9.2
85140	14.3S	67.4W	140	MS	58	0	0	0	1.6	5.3	5.5
85141	14.5S	67.6W	204	MS	59	1	2	0	1.6	4.9	5.2
85210	16.3S	58.4W	124	MS	58	2	3	0	1.3	5.2	5.4
85264	18.5S	64.1W	1998	S	52	51	98	0	0.0	10.4	10.4
85312	19.8S	63.9W	992	S	45	2	4	62	3.0	-5.0	5.8
85365	21.9S	63.7W	645	MS	55	2	4	4	1.8	4.0	4.4
85394	22.8S	64.3W	381	MS	42	1	2	2	2.9	4.6	5.4
85406	18.3S	70.3W	55	M	119	0	0	0	0.9	5.1	5.2
85432	22.5S	68.9W	2320	S8	83	0	0	0	0.7	5.8	5.8

WMO REGION 4:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
71023	65.9N	89.5W	18	MS	120	120	100	0			
71048	61.6N	125.8W	610	MS	119	0	0	1	1.3	5.4	5.6
71506	66.9N	136.3W	720	MS	120	0	0	11	1.8	-4.3	4.7
71747	48.8N	91.6W	424	MS	119	0	0	0	0.7	4.1	4.2
72327	36.1N	86.7W	182	MS	119	0	0	0	0.7	4.2	4.3
76118	30.4N	109.7W	1040	MS	33	0	0	3	1.8	-10.6	10.8
76243	28.7N	100.5W	250	MS	90	0	0	2	1.2	4.2	4.4
76543	22.0N	98.8W	104	MS	33	0	0	100	1.2	8.1	8.2
76625	20.6N	100.4W	1813	MS	55	1	2	98	0.8	-7.6	7.6
76658	19.2N	103.7W	494	MS	20	0	0	0	0.6	5.1	5.1
76683	19.3N	98.2W	2248	MS	99	0	0	0	0.9	4.1	4.2
76743	18.0N	92.9W	10	MS	79	0	0	0	0.7	6.2	6.2
76855	15.7N	96.5W	43	MS	57	0	0	61	0.8	-4.6	4.7
76903	14.9N	92.3W	118	MS	97	0	0	0	0.9	6.3	6.4

WMO REGION 5:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
92010	6.1S	145.4E	1587	M	40	0	0	0	0.8	10.4	10.4
92036	2.4S	147.4E	1	8	214	160	75	0	0.5	-0.2	0.5
94130	14.8S	131.9E	120	MS	107	0	0	0	1.0	5.9	6.0
95815	35.1S	144.0E	72	MS	120	0	0	0	2.6	6.8	7.3
97378	10.7S	123.1E	1	MS	42	40	95	0	0.1	-14.7	14.7

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
01280	64.3N	11.2E	86	MS	90	2	2	1	1.3	-4.0	4.2
06605	47.1N	7.1E	1599	S8	118	0	0	29	1.7	-5.4	5.7
06685	47.0N	9.1E	515	MS	119	0	0	0	1.2	7.8	7.9
10557	50.5N	11.1E	845	S8	360	360	100	0			
11116	47.5N	10.8E	870	S	59	1	2	0	0.8	4.8	4.9
12140	54.4N	18.7E	2	MS	118	0	0	0	0.6	8.1	8.1
13269	44.3N	19.9E	176	MS	116	0	0	0	1.2	8.8	8.9
14554	44.9N	18.4E	140	S	60	5	8	0	1.0	-13.2	13.2
14650	43.8N	18.0E	972	S	59	16	27	0	1.6	4.6	4.9
17092	39.8N	39.5E	1218	S8	120	0	0	3	1.9	8.7	8.9
17203	38.9N	40.5E	1177	S8	119	0	0	0	1.3	8.7	8.8

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89004	71.7S	2.8W	815	MS	109	0	0	0	1.9	-5.2	5.5
89263	66.0S	66.1W	20	M	246	0	0	0	1.6	9.5	9.6
89264	71.4S	68.9W	780	S	199	0	0	0	1.5	8.4	8.5
89266	72.2S	60.3W	91	S	246	167	68	0	2.6	-13.7	13.9
89272	74.8S	71.5W	1369	S	255	255	100	0			
89512	70.8S	11.8E	140	MS	120	0	0	0	1.1	-4.2	4.3
89612	66.3S	110.8E	390	S	260	260	100	0			
89637	69.9S	130.0E	2560	S	188	34	18	0	0.7	13.4	13.4
89661	73.1S	169.6E	200	S	77	0	0	0	1.5	7.5	7.6
89666	76.7S	163.0E	200	S	78	78	100	0			
89744	74.0S	43.0E	3353	S	282	0	0	0	0.6	7.4	7.4
89769	78.5S	168.4E	50	S	400	400	100	0			
89847	67.6S	146.0E	30	S	315	0	0	0	1.3	-7.3	7.4

TABLE 4A

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: November 2001

Monitoring procedures

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :300.0 - 150.0 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP $\geq$ 20

NB : All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAH	1780	0	39	1.5	0.6	1766	0	40	0	6.7	0.7
AAL	4804	1	31	1.7	0.3	4787	0	30	0	7.0	0.6
AAR	1172	1	7	1.8	-0.6	1176	0	7	0	7.9	0.2
ACA	2683	0	12	1.8	0.2	2670	0	11	0	7.9	0.4
ACI	49	0	51	1.0	0.3	49	0	53	0	8.8	0.7
AEA	1002	0	2	1.8	0.7	984	0	3	0	8.1	0.9
AEL	304	1	8	1.7	-0.8	307	0	8	0	7.5	-0.2
AEY	56	0	2	2.2	1.7	55	0	2	0	5.8	-1.1
AFL	553	1	3	1.8	0.3	551	1	4	0	7.8	0.5
AFR	1578	1	7	1.7	0.3	1588	0	8	0	7.9	0.9
AIH	273	0	2	1.6	0.2	277	0	4	0	8.9	1.2
AJM	207	0	1	1.4	0.2	205	0	2	0	7.6	1.3
AMM	104	0	5	1.2	0.6	105	0	10	0	9.3	1.4
AMT	652	0	41	2.2	1.3	651	0	41	0	6.7	1.0
AMX	361	1	7	2.2	0.4	364	1	5	0	9.9	0.7
ANA	613	0	12	1.4	0.5	613	0	13	0	7.0	0.6
ANZ	5511	0	35	1.4	0.4	5489	0	36	0	7.5	0.8
AVA	274	0	3	2.0	1.2	274	1	3	0	7.9	1.1
AVE	296	2	4	1.7	1.0	296	0	3	0	10.2	1.9
AVN	123	2	49	1.1	0.0	122	0	48	0	4.9	0.3
AXF	33	0	27	1.2	0.4	33	0	27	0	6.7	1.8
AZA	587	4	41	2.1	0.7	596	0	6	0	9.3	0.9
BAL	271	0	9	1.3	0.1	271	0	9	0	6.7	0.9
BAW	864	0	8	1.7	-0.2	861	0	8	0	6.9	0.8
BES	22	5	18	3.8	-2.9	21	0	5	0	5.6	1.9
BLX	39	0	0	1.1	0.2	40	0	5	0	8.7	-0.7
BWA	302	1	6	2.2	1.4	302	0	6	0	8.9	1.3
CAL	126	0	4	1.6	0.4	139	1	6	0	8.4	0.4
CCA	316	0	16	2.7	0.7	343	1	100	0	12.5	0.0
CES	440	2	5	1.7	0.5	443	1	6	0	9.0	0.0
CFG	1009	1	4	1.4	-0.4	1001	0	4	0	7.6	0.3
CLX	485	0	5	1.8	-0.3	488	1	7	0	7.8	0.3
CMI	39	0	31	2.4	-0.6	40	0	25	0	6.7	2.1
CMM	126	0	27	2.2	-0.3	129	0	26	0	6.6	1.1
COA	789	1	39	1.2	-0.1	790	0	38	0	7.3	0.4
CPA	22	0	36	1.6	0.8	25	0	44	0	16.4	1.0
CRL	403	1	6	1.7	0.6	406	0	5	0	7.6	0.7
CSN	91	0	10	2.1	0.5	93	1	12	0	9.3	1.3
CUB	256	1	5	1.9	1.1	254	0	5	0	9.4	0.2
DAF	20	0	5	1.8	-0.8	20	0	5	0	6.2	-0.7
DAL	2593	1	39	1.3	-0.1	2633	0	40	0	7.3	0.1
DCE	123	1	7	1.5	0.6	125	0	8	0	7.2	0.2
DLH	1595	0	10	1.5	0.2	1600	0	11	0	6.8	0.8
EDW	92	0	1	1.2	-0.1	96	0	1	0	6.4	1.9
EEZ	79	3	5	1.7	1.0	80	0	8	0	9.5	1.2
EIA	593	1	30	1.9	0.5	586	0	67	0	11.7	2.0
ELY	98	2	7	1.4	0.3	106	0	8	0	7.7	0.8
EVA	298	0	7	1.7	-0.5	314	2	11	0	8.5	0.3
EWW	111	0	5	1.6	0.3	113	0	4	0	6.4	1.2
FDX	2007	1	44	1.5	0.5	2020	0	43	0	8.0	0.3
FIN	281	0	4	1.7	0.1	286	1	6	0	8.5	0.4
FJI	736	0	46	1.4	0.3	710	1	47	0	7.4	0.7
FOM	545	0	34	1.2	0.5	536	1	34	0	6.7	1.4
GAF	38	5	16	1.9	-0.6	38	0	16	0	7.1	0.3
GCO	167	0	7	1.9	0.4	169	0	100	0	15.7	0.6
GHA	39	0	3	1.9	0.1	38	0	5	0	10.6	2.1
GRL	48	0	2	1.4	0.1	49	0	4	0	10.2	-0.5
GTI	292	0	7	1.7	0.1	294	0	8	0	8.5	1.0
HAL	3383	0	36	1.4	0.3	3352	0	37	0	9.3	1.0

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
IBE	3167	1	6	1.7	0.7	3138	0	6	0	7.9	0.7
ICE	877	1	3	1.5	0.1	856	0	3	0	8.1	0.8
IWD	136	1	1	1.4	-0.4	133	0	1	0	8.5	0.5
JAA	68	7	18	2.3	1.4	68	0	10	0	7.7	2.8
JAL	2734	0	4	1.5	0.2	2727	0	5	0	7.6	0.1
JAZ	786	1	4	1.5	0.7	788	1	5	0	7.1	0.7
JKK	128	1	1	1.3	0.1	104	1	2	0	7.5	-0.4
JMC	64	5	9	1.3	0.2	60	0	7	0	7.7	1.5
KAI	32	0	28	3.2	1.3	33	0	24	0	9.0	-0.6
KAL	2717	1	13	1.8	0.3	2729	0	13	0	8.4	0.4
KLM	2068	0	8	1.6	0.2	2090	0	8	0	7.9	0.5
LAN	93	11	100	3.6	0.2	106	0	100	0	11.9	1.1
LAP	76	3	49	2.5	1.2	76	0	45	0	8.7	0.7
LDA	65	0	8	1.4	0.3	62	0	11	0	7.7	0.1
LDI	338	1	42	2.8	1.4	338	0	4	0	7.8	0.5
LIB	934	1	9	1.5	0.8	941	0	11	0	9.4	0.7
LOT	82	1	7	1.9	-1.3	82	0	6	0	6.0	0.5
LTU	936	1	5	1.5	0.1	941	0	5	0	7.0	1.0
MAS	379	2	13	1.9	0.1	396	0	12	0	8.1	0.1
MPD	275	0	5	1.6	0.0	269	0	6	0	9.0	1.0
MPH	776	1	3	1.6	-0.7	783	0	4	0	8.3	0.7
NCA	745	1	4	1.8	0.3	736	0	4	0	7.8	0.5
NWA	8275	1	10	1.6	0.5	8324	0	10	0	7.8	0.3
NZL	3449	0	13	1.3	0.3	3449	0	13	0	5.8	1.1
OAE	111	0	46	1.2	-0.7	110	0	46	0	7.0	0.3
PAC	410	1	27	1.8	-0.2	424	1	27	0	7.2	0.7
PAL	1240	0	9	1.6	-0.1	1180	0	9	0	8.2	0.5
PAO	363	1	57	1.5	0.0	354	0	57	0	9.2	1.2
PUA	38	3	37	3.0	1.0	38	0	45	0	22.1	3.9
QFA	4820	0	64	1.5	0.4	4815	0	64	0	6.6	0.7
RAF	35	0	0	1.9	1.2	35	0	0	0	7.8	0.6
RAM	35	0	0	1.8	-1.3	35	0	3	0	8.1	0.8
RCH	751	1	100	2.5	-0.1	747	0	100	0	12.3	1.7
RON	29	10	48	1.0	0.7	30	0	50	0	14.4	0.6
RYN	205	1	43	1.8	0.8	204	0	43	0	7.4	0.5
RZO	208	16	19	1.9	-0.4	205	0	6	0	9.7	1.1
SAA	356	0	6	1.6	0.0	358	0	8	0	8.1	0.7
SIA	294	0	4	1.4	0.1	298	0	4	0	6.5	0.5
SLR	176	1	7	1.2	0.6	181	0	10	0	7.7	-0.2
SQC	38	0	0	1.6	0.9	38	0	0	0	6.7	2.1
SVA	31	0	6	2.0	0.2	31	3	10	0	7.7	-0.5
TAG	30	0	7	2.8	1.2	30	0	3	0	8.3	0.4
TAM	43	2	28	2.7	2.2	44	0	100	0	13.8	2.9
TAP	570	1	3	1.6	0.2	568	0	3	0	7.9	1.1
THA	213	0	4	1.7	-0.2	214	0	31	0	8.3	0.8
THT	70	0	44	2.3	0.9	70	0	43	0	9.6	-1.2
TPA	36	0	3	1.5	0.6	37	0	3	0	5.1	0.3
TSC	55	0	0	1.8	0.3	57	0	2	0	6.7	1.0
TWA	596	0	42	1.5	0.2	596	0	42	0	5.8	0.5
UAL	127776	0	100	1.2	-0.1	127672	0	100	0	5.0	0.6
UPS	1849	0	52	1.7	0.3	1853	0	52	0	7.7	0.4
USA	160	1	1	1.1	-0.1	146	0	1	0	6.3	0.7
VIR	346	0	3	1.6	-0.2	352	0	4	0	7.6	0.8
VKG	37	0	8	2.1	0.4	36	0	8	0	4.7	0.8
VPB	27	0	7	2.1	0.1	27	0	11	0	13.4	-0.7
VRG	192	5	26	3.3	2.0	202	1	100	0	10.9	1.3
VVR	45	2	29	2.6	1.0	47	0	26	0	11.0	-1.0
WOA	268	1	2	1.3	0.2	291	0	6	0	8.8	1.4
XBS	43	0	40	1.4	0.4	43	0	40	0	5.1	1.0

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AU	41097	0	13	1.3	0.7	41100	0	13	0	5.4	0.7
EU	127698	0	33	1.3	0.3	127698	0	32	0	4.7	0.5
KL	3919	0	28	1.5	1.1	3902	0	27	0	5.4	0.8
LH	3252	0	9	1.5	1.0	3216	0	9	0	5.3	0.9
LN	35	0	40	2.4	-0.3	35	0	40	0	8.2	3.3
MK	3229	0	67	1.8	1.6	3201	0	5	0	7.0	1.7
SA	9255	0	43	2.1	1.7	9241	0	11	0	6.1	0.9
SV	220	0	100	2.1	1.9	213	0	1	0	4.8	-0.1
TN	61	5	18	2.1	0.8	63	0	16	0	14.4	1.2
WA	323	5	13	1.6	0.4	318	3	12	0	8.3	1.2
XX	4296	2	8	1.4	0.2	4279	0	9	0	9.3	1.3
N	649	1	18	2.2	0.7	689	0	19	0	7.8	0.9
US ACARS	805290	2	58	1.4	0.5	805280	0	57	0	5.3	0.8

TABLE 4B

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: November 2001

Monitoring procedures

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :1000.0 – 300.1 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP $\geq$ 20

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	293	1	32	1.2	0.0	289	0	32	0	7.0	0.2
ACA	22	14	32	1.2	0.4	22	0	23	0	5.6	2.6
ACI	24	0	58	0.7	0.0	24	0	58	0	7.1	2.2
AFR	89	1	8	1.9	0.3	91	0	11	0	10.7	-0.5
ANZ	169	4	30	1.1	0.2	173	2	31	0	6.7	0.7
AXF	47	4	36	1.3	0.6	47	0	36	0	8.7	1.0
BAF	27	0	0	1.7	0.8	29	0	3	0	7.5	-0.4
CFC	72	0	11	1.3	0.8	73	0	12	0	6.6	0.9
COA	70	0	54	2.0	-0.6	70	0	53	0	5.7	0.5
CUB	27	0	4	2.5	1.1	28	0	4	0	10.1	-1.3
DAL	340	2	53	1.5	0.1	342	0	52	0	6.9	0.3
DHL	48	0	56	6.5	-6.1	48	4	10	0	7.1	0.4
DLH	177	0	11	1.3	0.3	178	0	12	0	6.8	0.7
EIA	38	5	26	2.1	0.2	38	0	61	0	13.0	-0.2
EVA	47	0	40	1.2	-0.6	47	0	45	0	7.3	0.3
EWW	62	2	6	1.0	0.5	64	2	6	0	6.1	1.6
FDX	548	1	29	1.4	0.6	550	0	30	0	8.5	0.8
GAF	20	0	0	0.9	0.4	20	0	5	0	10.6	-2.4
GCO	264	1	7	1.7	0.1	267	0	100	0	16.1	2.3
GHA	20	10	10	1.1	-0.5	20	0	15	0	17.7	1.9
GTI	29	0	7	1.2	0.2	30	0	10	0	9.3	1.0
HAL	73	0	40	1.8	0.6	73	0	38	0	8.6	1.7
IBE	67	1	21	1.6	0.7	69	0	20	0	6.3	0.1
ICE	28	0	4	1.4	-0.4	28	0	7	0	9.8	0.6
JAA	24	0	4	2.9	1.0	24	0	0	0	7.0	2.0
JAL	61	2	7	1.8	-0.2	61	0	5	0	8.5	0.2
JAZ	90	1	2	1.9	0.9	91	0	2	0	6.1	0.9
KAL	49	0	20	2.9	-0.5	50	0	18	0	10.3	0.3
KIW	93	5	17	3.2	2.5	87	0	14	0	8.0	0.2
KLM	41	0	5	1.1	0.8	43	0	5	0	5.8	-0.2
LAN	111	2	100	3.1	-0.5	128	0	100	0	12.2	5.4
MAS	35	0	23	1.6	-0.6	34	0	24	0	7.7	-0.8
MPH	26	0	0	1.0	0.3	27	0	0	0	6.3	-0.4
NCA	148	1	1	1.6	0.6	147	0	3	0	7.9	0.7
NWA	172	1	12	1.7	0.4	172	1	13	0	7.8	-1.6
NZL	17438	0	55	1.3	0.3	17438	0	55	0	4.9	0.4
PAC	38	3	8	1.6	0.1	41	0	10	0	12.4	0.4
PAL	29	0	7	1.5	-0.4	28	0	7	0	6.9	1.5
QFA	204	1	46	1.6	0.0	203	0	46	0	9.3	0.4
RCH	164	5	100	3.5	-1.3	166	2	100	0	14.8	2.2
RRR	72	13	18	2.5	1.7	72	0	8	0	9.3	1.0
SAA	43	0	0	1.1	-0.3	43	0	0	0	5.8	-0.2
SDM	28	0	25	4.8	4.6	28	0	21	0	16.0	2.0
SFR	51	4	12	3.4	1.1	38	0	0	0	5.5	1.2
SIA	43	0	5	0.9	0.2	43	0	5	0	5.1	0.8
SKI	49	22	35	4.2	-1.0	25	0	0	0	7.3	0.0
SQC	21	0	0	1.1	0.7	21	0	0	0	6.1	0.4
UAL	213197	0	100	1.2	0.1	212995	0	100	0	4.5	0.2
UPS	169	0	34	1.4	0.3	172	1	36	0	6.9	0.2
VTA	38	0	13	2.7	-1.2	42	0	10	0	6.0	2.6
VVP	47	21	43	3.2	-1.3	50	0	30	0	7.6	2.4
VVR	24	4	21	2.1	-1.2	35	3	29	0	8.8	0.3
WOA	53	2	2	1.4	0.7	54	0	4	0	11.8	0.4
AU	28170	0	50	1.3	0.3	28176	0	50	0	4.5	0.1
EU	587451	0	70	1.1	0.2	587033	0	70	0	4.0	0.0

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
KL	2748	0	56	1.4	0.8	2721	0	55	0	3.9	0.3
LH	981	0	67	1.2	0.4	974	0	67	0	4.0	0.4
MK	2559	0	82	1.5	0.9	2524	0	52	0	4.6	0.3
SA	6936	0	71	1.8	0.7	6928	0	60	0	4.7	0.5
SV	508	0	100	3.3	3.0	497	0	42	0	4.2	0.8
WA	40	13	15	1.3	0.4	39	0	8	0	9.9	2.6
XX	878	4	9	1.6	0.2	876	0	11	0	11.5	1.8
US ACARS	1626892	0	79	1.3	0.4	1621250	0	80	0	4.3	0.2

Figure 3a. AIRCRAFT 300 - 150 hPa mean daily count. NOVEMBER 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Global average number of observations in 24 hours = 40411

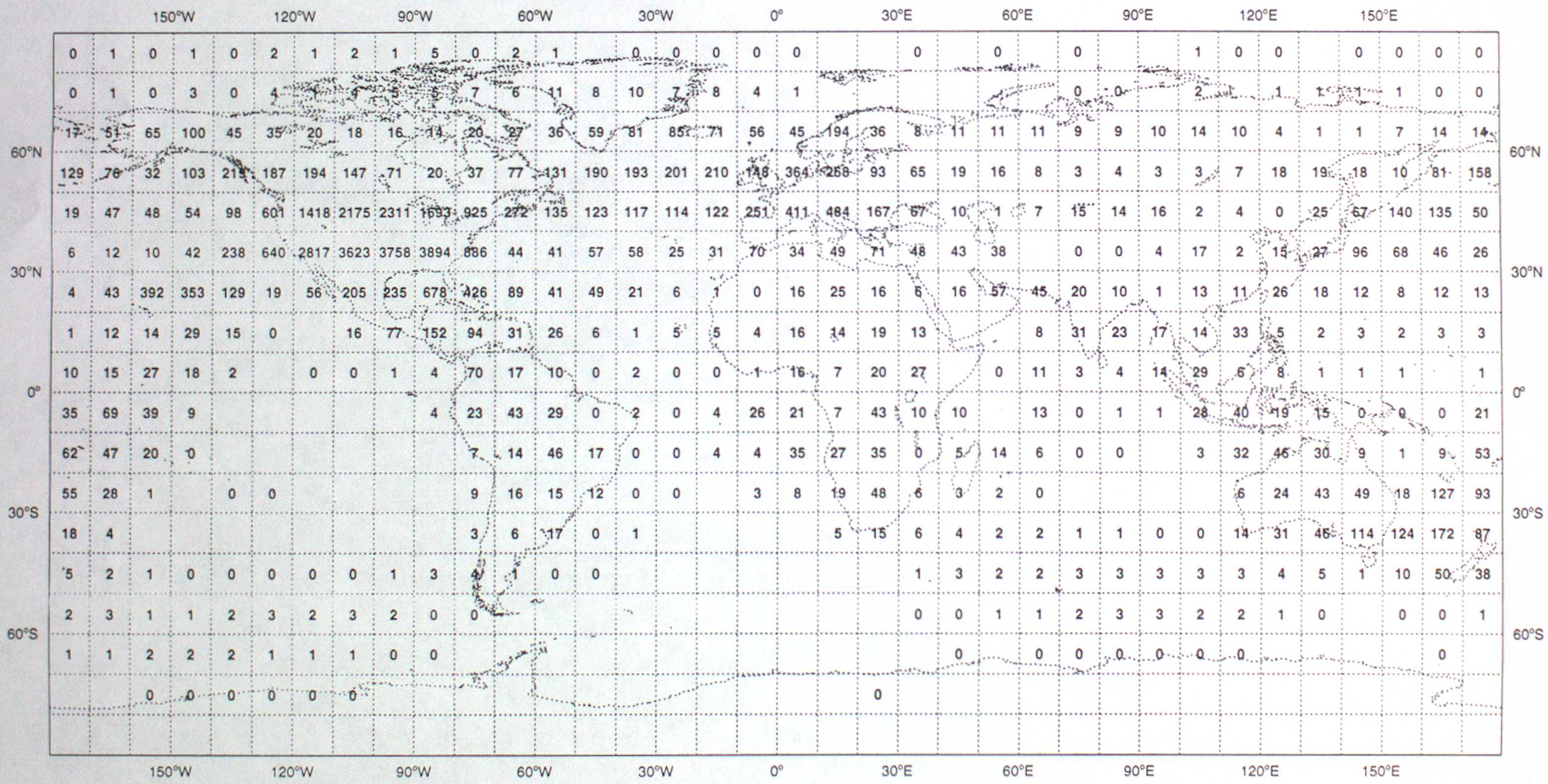

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 3b. AIRCRAFT 1000 - 301 hPa mean daily count. NOVEMBER 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Global average number of observations in 24 hours = 82868

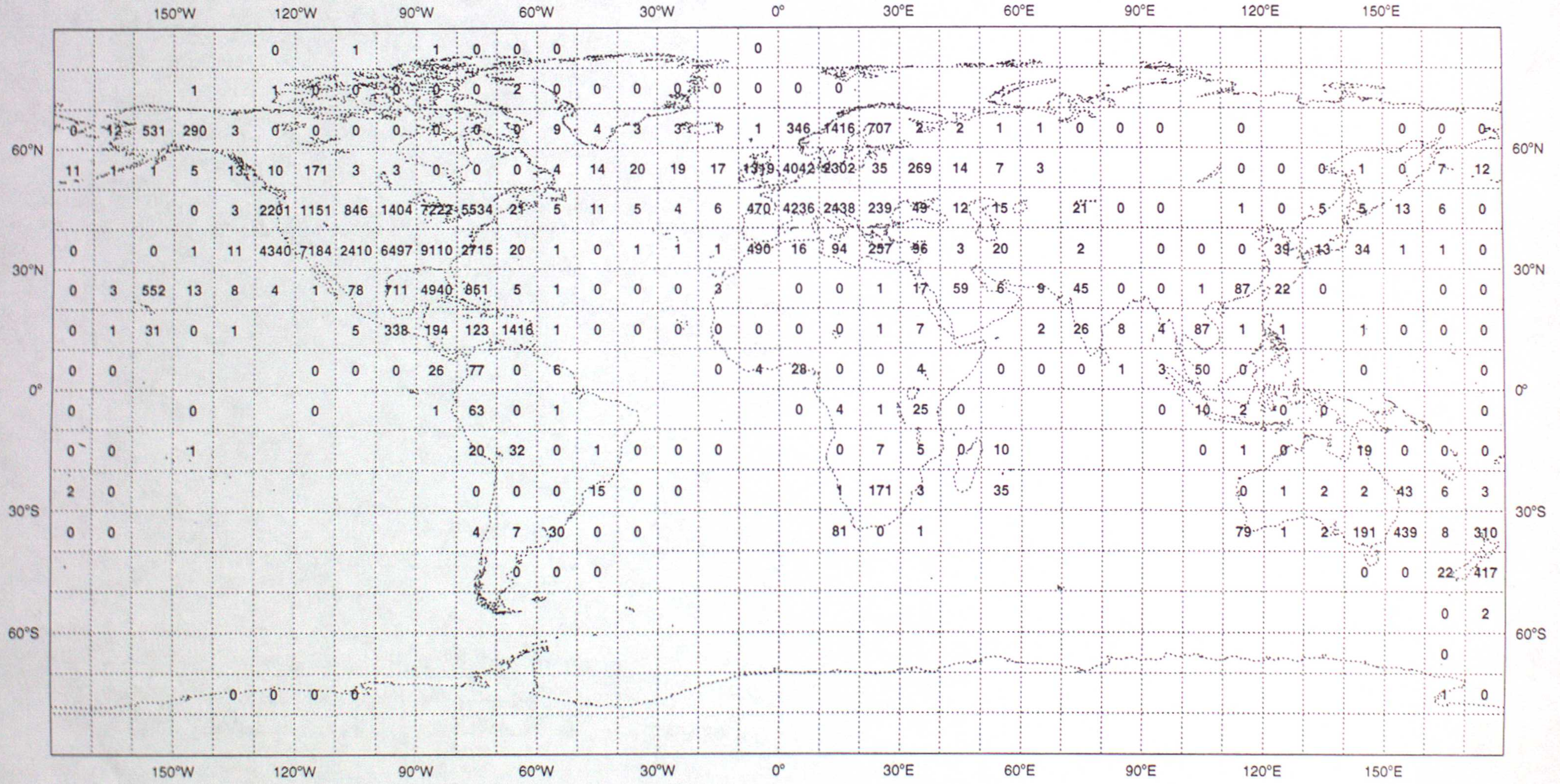

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
0 1 1 0 0 0 0
1 1 0 0 0 0 0 2 0 0 0 0 0 0 0 0
0 12 531 290 3 0 0 0 0 0 0 0 9 4 3 3 1 1 346 1416 707 2 2 1 1 0 0 0 0 0 0 0
11 1 1 5 13 10 171 3 3 0 0 0 4 14 20 19 17 1319 4042 2302 35 269 14 7 3 0 0 0 1 0 7 12
0 3 2201 1151 846 1404 7222 5534 21 5 11 5 4 6 470 4236 2438 239 49 12 15 21 0 0 1 0 5 5 13 6 0
0 0 1 11 4340 7184 2410 6497 9110 2715 20 1 0 1 1 1 490 16 94 257 56 3 20 2 0 0 0 39 13 34 1 1 0
0 3 552 13 8 4 1 78 711 4940 851 5 1 0 0 0 3 0 0 1 17 59 6 9 45 0 0 1 87 22 0 0 0
0 1 31 0 1 5 338 194 123 1416 1 0 0 0 0 0 0 0 1 7 2 26 8 4 87 1 1 1 0 0 0
0 0 0 0 0 26 77 0 6 0 4 28 0 0 4 0 0 0 1 3 50 0 0 0
0 0 0 1 63 0 1 0 4 1 25 0 0 10 2 0 0 0
0 0 1 20 32 0 1 0 0 0 0 7 5 0 10 0 1 0 19 0 0 0
2 0 0 0 0 15 0 0 1 171 3 35 0 1 2 2 43 6 3
0 0 4 7 30 0 0 81 0 1 79 1 2 191 439 8 310
0 0 0 0 0 22 417
0 2
0
0 0 0 0 1 0

Figure 4a. AIRCRAFT 300 - 150 hPa mean winds. NOVEMBER 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

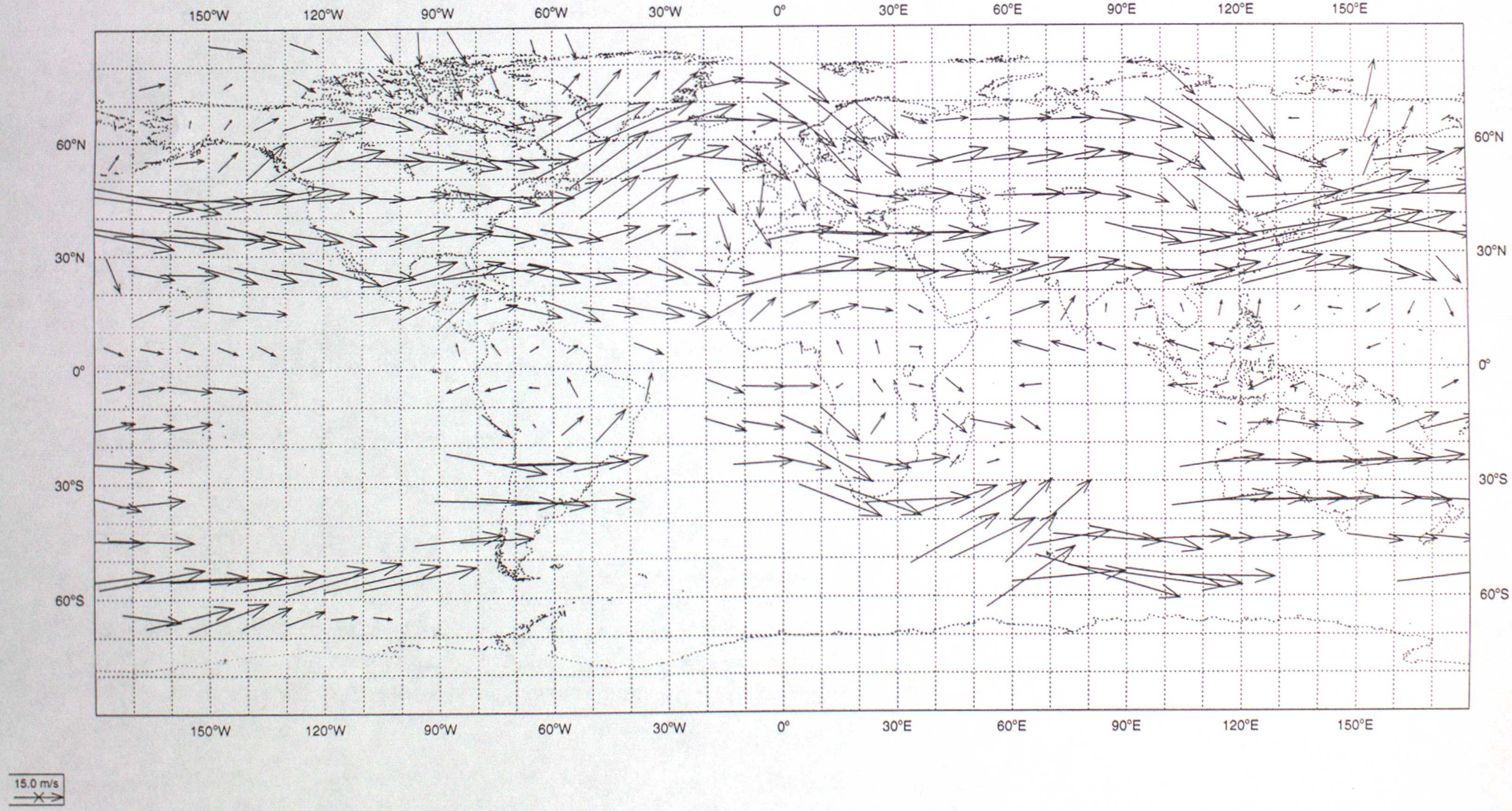

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0 m/s

Figure 4b. AIRCRAFT 1000 - 301 hPa mean winds. NOVEMBER 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

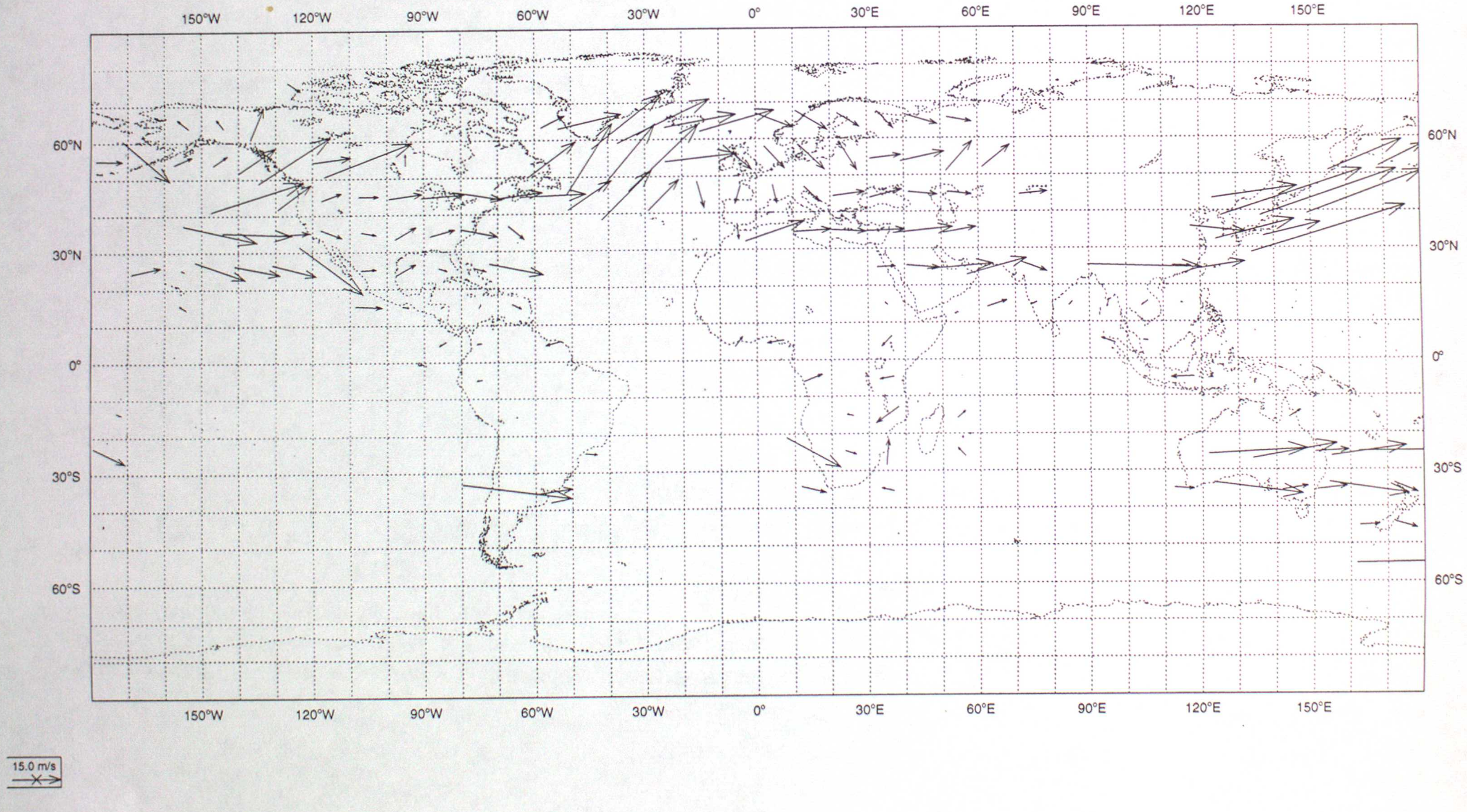

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0 m/s

Figure 5a. AIRCRAFT 300 - 150 hPa mean O-B winds. NOVEMBER 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

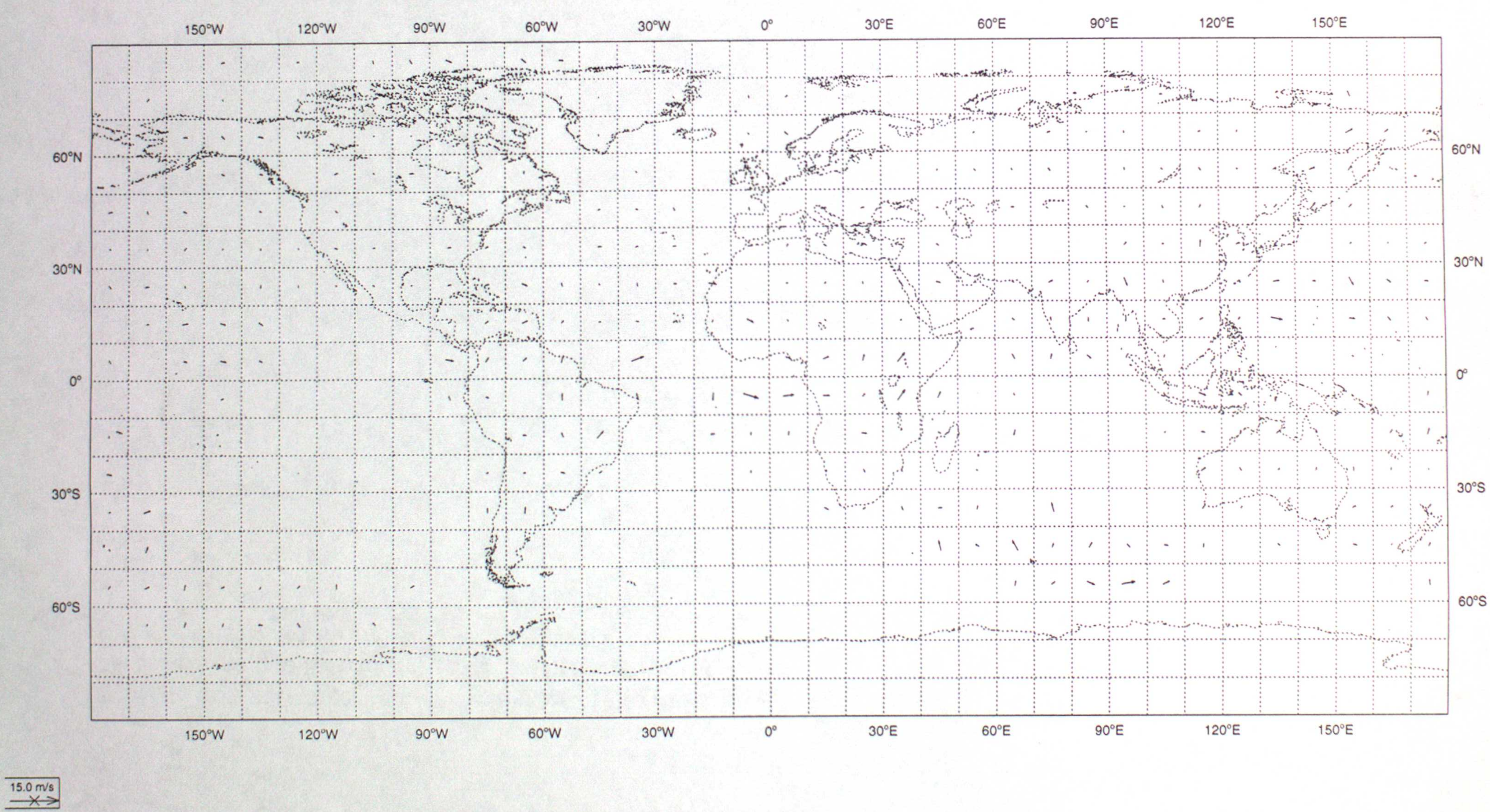

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0 m/s

Figure 5b. AIRCRAFT 1000 - 301 hPa mean O-B winds. NOVEMBER 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

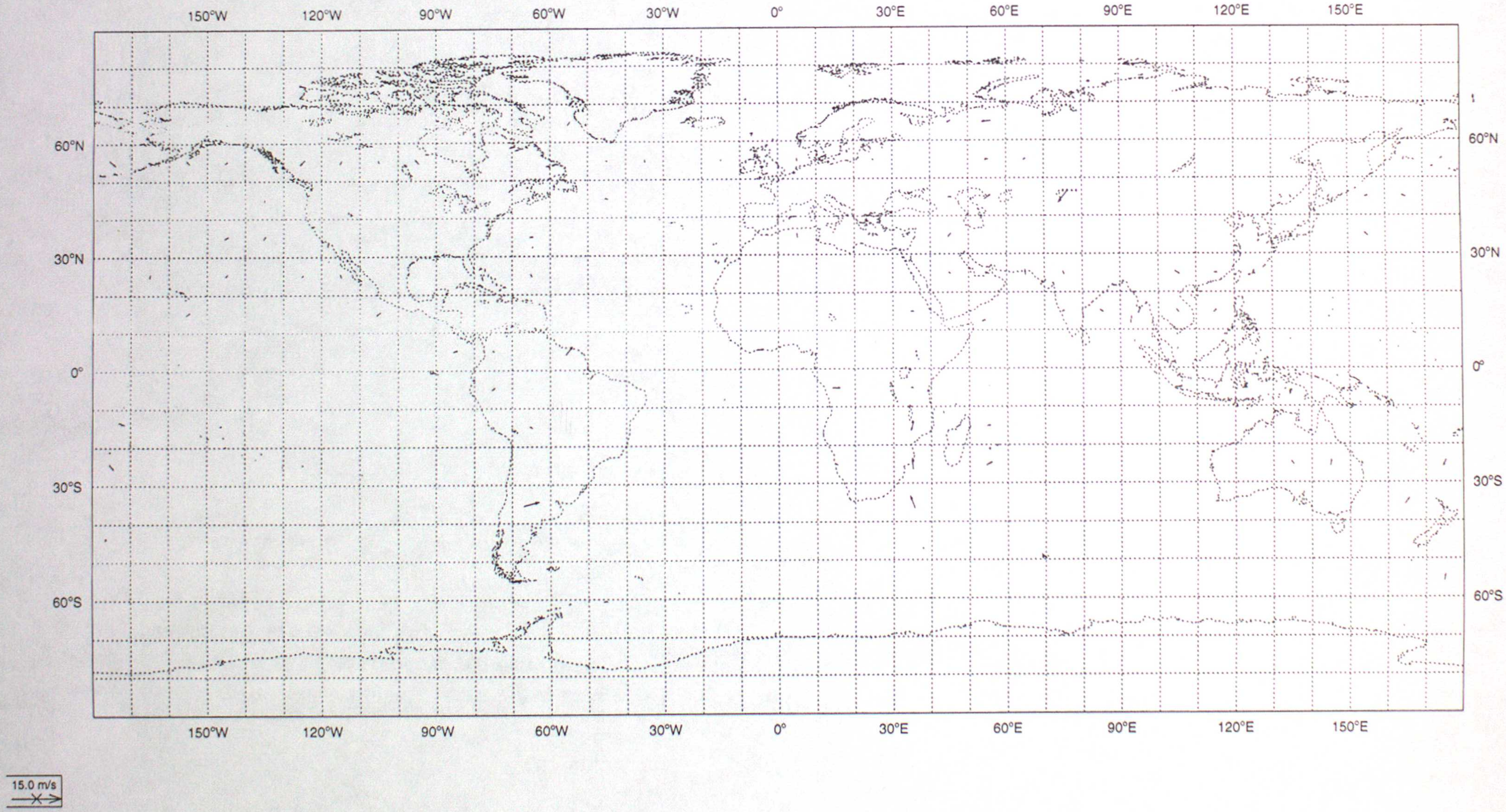

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0 m/s

Figure 6a. AIRCRAFT 300 - 150 hPa mean O-B speeds (ms-1). NOVEMBER 2001

Observations with O-B vector difference greater than 60 ms-1 excluded

Values are printed where greater than 30 obs are present

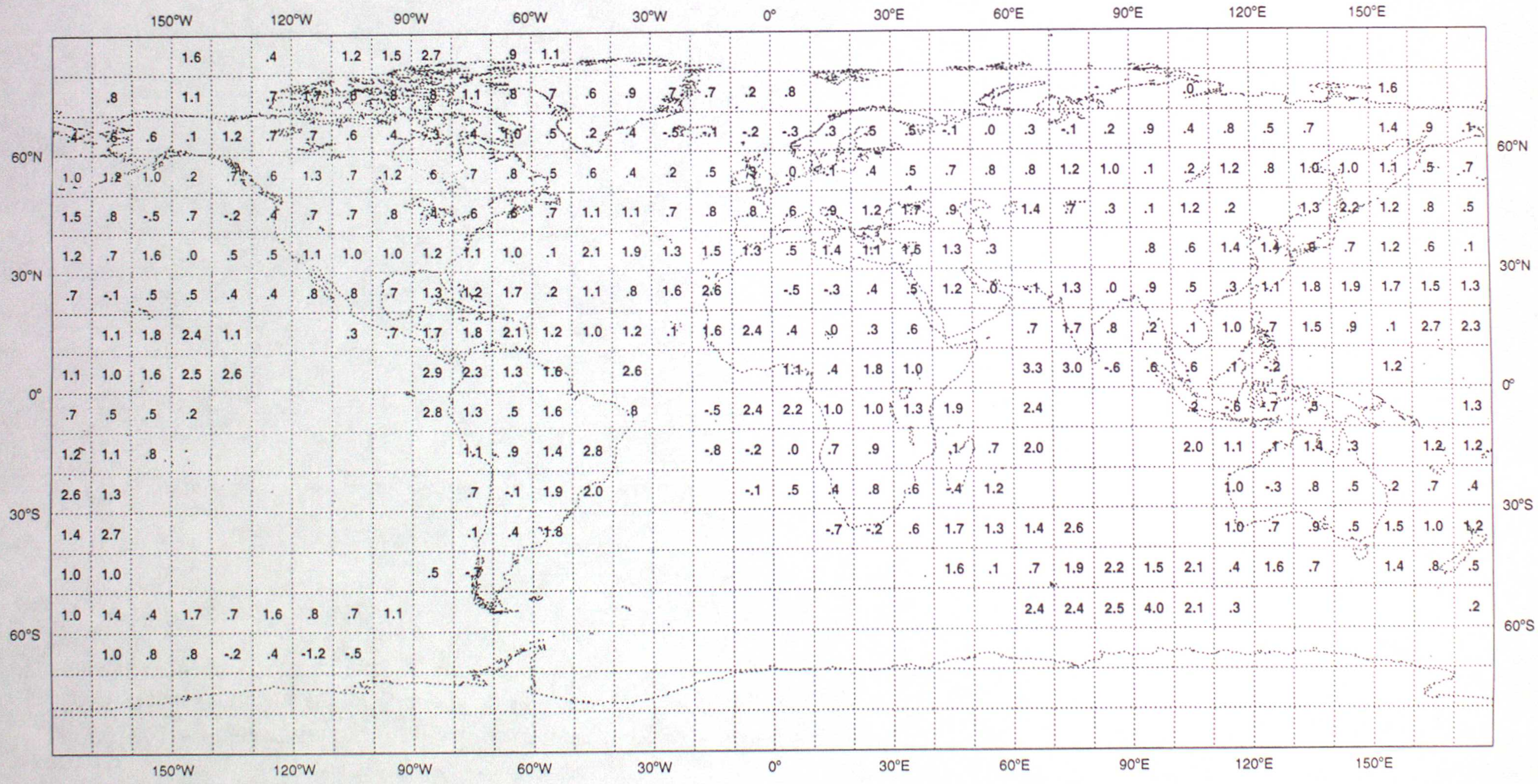

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
1.6 .4 1.2 1.5 2.7 .9 1.1
.8 1.1 .7 1.7 .8 .8 .8 1.1 .8 .7 .6 .9 .7 .7 .2 .8 .0 1.6
.4 .6 .6 .1 1.2 .7 .7 .6 .4 .3 .4 1.0 .5 .2 .4 -.5 -.1 -.2 -.3 .3 .5 .5 -.1 .0 .3 -.1 .2 .9 .4 .8 .5 .7 1.4 .9 .1
1.0 1.2 1.0 .2 .7 .6 1.3 .7 1.2 .6 .7 .8 .5 .6 .4 .2 .5 .3 .0 .1 .4 .5 .7 .8 .8 1.2 1.0 .1 .2 1.2 .8 1.0 1.0 1.1 .5 .7
1.5 .8 -.5 .7 -.2 .4 .7 .7 .8 .4 .6 .6 .7 1.1 1.1 .7 .8 .8 .6 .9 1.2 1.7 .9 1.4 .7 .3 .1 1.2 .2 1.3 2.2 1.2 .8 .5
1.2 .7 1.6 .0 .5 .5 1.1 1.0 1.0 1.2 1.1 1.0 .1 2.1 1.9 1.3 1.5 1.3 .5 1.4 1.1 1.5 1.3 .3 .8 .6 1.4 1.4 .8 .7 1.2 .6 .1
.7 -.1 .5 .5 .4 .4 .8 .8 .7 1.3 1.2 1.7 .2 1.1 .8 1.6 2.6 -.5 -.3 .4 .5 1.2 .0 -.1 1.3 .0 .9 .5 .3 1.1 1.8 1.9 1.7 1.5 1.3
1.1 1.8 2.4 1.1 .3 .7 1.7 1.8 2.1 1.2 1.0 1.2 .1 1.6 2.4 .4 .0 .3 .6 .7 1.7 .8 .2 .1 1.0 .7 1.5 .9 .1 2.7 2.3
1.1 1.0 1.6 2.5 2.6 2.9 2.3 1.3 1.6 2.6 1.1 .4 1.8 1.0 3.3 3.0 -.6 .6 .6 .1 -.2 1.2
.7 .5 .5 .2 2.8 1.3 .5 1.6 .8 -.5 2.4 2.2 1.0 1.0 1.3 1.9 2.4 .2 .6 .7 .5 1.3
1.2 1.1 .8 1.1 .9 1.4 2.8 -.8 -.2 .0 .7 .9 .1 .7 2.0 2.0 1.1 .1 1.4 .3 1.2 1.2
2.6 1.3 .7 -.1 1.9 2.0 -.1 .5 .4 .8 .6 -.4 1.2 1.0 -.3 .8 .5 .2 .7 .4
1.4 2.7 .1 .4 1.8 -.7 -.2 .6 1.7 1.3 1.4 2.6 1.0 .7 .9 .5 1.5 1.0 1.2
1.0 1.0 .5 .7 1.6 .1 .7 1.9 2.2 1.5 2.1 .4 1.6 .7 1.4 .8 .5
1.0 1.4 .4 1.7 .7 1.6 .8 .7 1.1 2.4 2.4 2.5 4.0 2.1 .3 .2
1.0 .8 .8 -.2 .4 -1.2 -.5

Figure 6b. AIRCRAFT 1000 - 301 hPa mean O-B speeds (ms-1). NOVEMBER 2001

Observations with O-B vector difference greater than 60 ms-1 excluded

Values are printed where greater than 30 obs are present

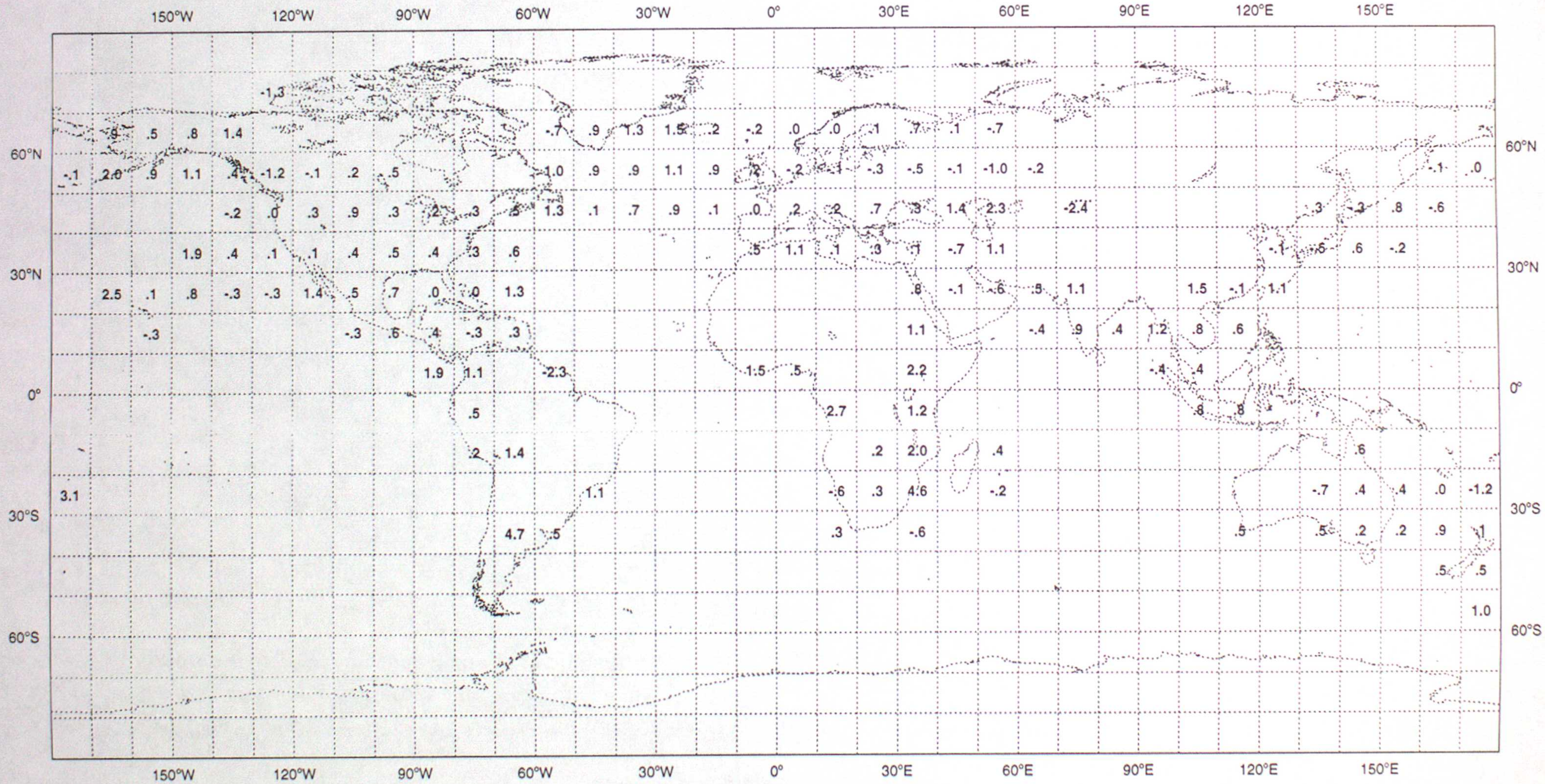
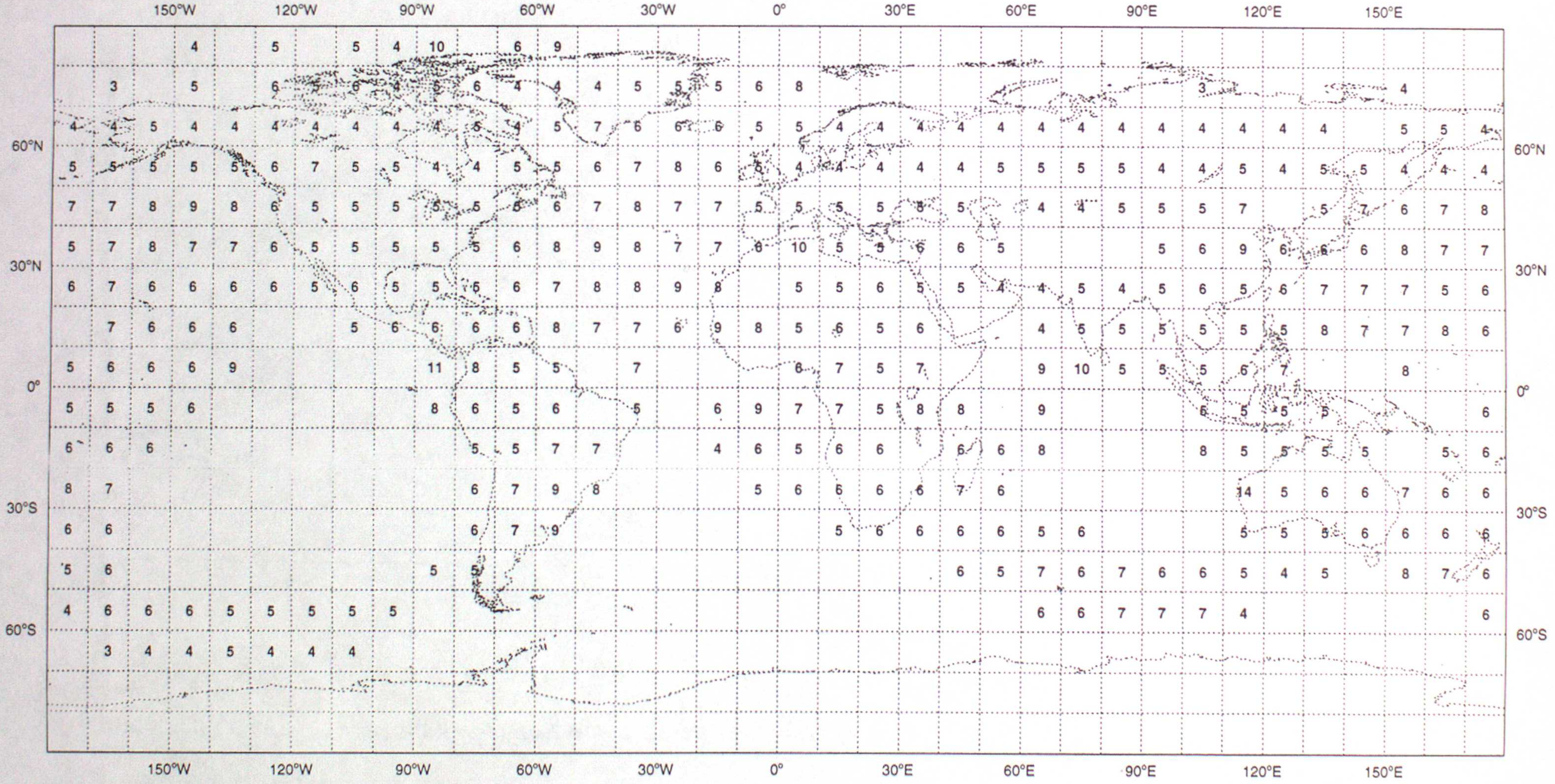

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
-1.3
.9 .5 .8 1.4 -.7 .9 1.3 1.5 .2 -.2 .0 .0 .1 .7 .1 -.7
-.1 2.0 .9 1.1 .4 -1.2 -.1 .2 .5 -1.0 .9 .9 1.1 .9 .2 -.2 -.1 -.3 -.5 -.1 -1.0 -.2 -.1 .0
-.2 .0 .3 .9 .3 .2 .3 .5 1.3 .1 .7 .9 .1 .0 .2 .2 .7 .3 1.4 2.3 -2.4 .3 .3 .8 -.6
1.9 .4 .1 .1 .4 .5 .4 .3 .6 .5 1.1 .1 .3 .1 -.7 1.1 -.1 .6 .6 -.2
2.5 .1 .8 -.3 -.3 1.4 .5 .7 .0 .0 1.3 .8 -.1 .6 .5 1.1 1.5 -.1 1.1
-.3 -.3 .6 .4 -.3 .3 1.1 -.4 .9 .4 1.2 .8 .6
1.9 1.1 -2.3 1.5 .5 2.2 -.4 .4
.5 2.7 1.2 .8 .8
.2 1.4 .2 2.0 .4 .6
3.1 1.1 -.6 .3 4.6 -.2 -.7 .4 .4 .0 -1.2
4.7 .5 .3 -.6 .5 .5 .2 .2 .9 .1
.5 .5
1.0

Figure 7a. AIRCRAFT 300 - 150 hPa RMS O-B vector (ms-1). NOVEMBER 2001

Observations with O-B vector difference greater than 60 ms-1 excluded

Values are printed where greater than 30 obs are present


150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N
30°N
0°
30°S
60°S
4 5 5 4 10 6 9
3 5 6 6 4 5 6 4 4 4 5 5 5 6 8 3 4
4 4 5 4 4 4 4 4 4 4 5 4 5 7 6 6 6 5 5 4 4 4 4 4 4 4 4 4 4 4 4 4 5 5 4
5 5 5 5 5 6 7 5 5 4 4 5 5 6 7 8 6 6 4 4 4 4 4 5 5 5 5 4 4 5 4 5 5 4 4 4
7 7 8 9 8 6 5 5 5 5 5 6 6 7 8 7 7 5 5 5 5 8 5 4 4 5 5 5 7 5 7 6 7 8
5 7 8 7 7 6 5 5 5 5 5 6 8 9 8 7 7 6 10 5 5 6 6 5 5 6 9 6 6 6 8 7 7
6 7 6 6 6 6 5 6 5 5 6 6 7 8 8 9 8 5 5 6 5 5 4 4 5 4 5 6 5 6 7 7 7 5 6
7 6 6 6 5 6 6 6 6 8 7 7 6 9 8 5 6 5 6 4 5 5 5 5 5 5 8 7 7 8 6
5 6 6 6 9 11 8 5 5 7 6 7 5 7 9 10 5 5 5 6 7 8
5 5 5 6 8 6 5 6 5 6 9 7 7 5 8 8 9 5 5 5 5 6
6 6 6 5 5 7 7 4 6 5 6 6 6 6 8 8 5 5 5 5 5 6
8 7 6 7 9 8 5 6 6 6 6 7 6 14 5 6 6 7 6 6
6 6 6 7 9 5 6 6 6 6 5 6 5 5 5 6 6 6 6
5 6 5 5 6 5 7 6 7 6 6 5 4 5 8 7 6
4 6 6 6 5 5 5 5 5 6 6 7 7 7 4 6
3 4 4 5 4 4 4

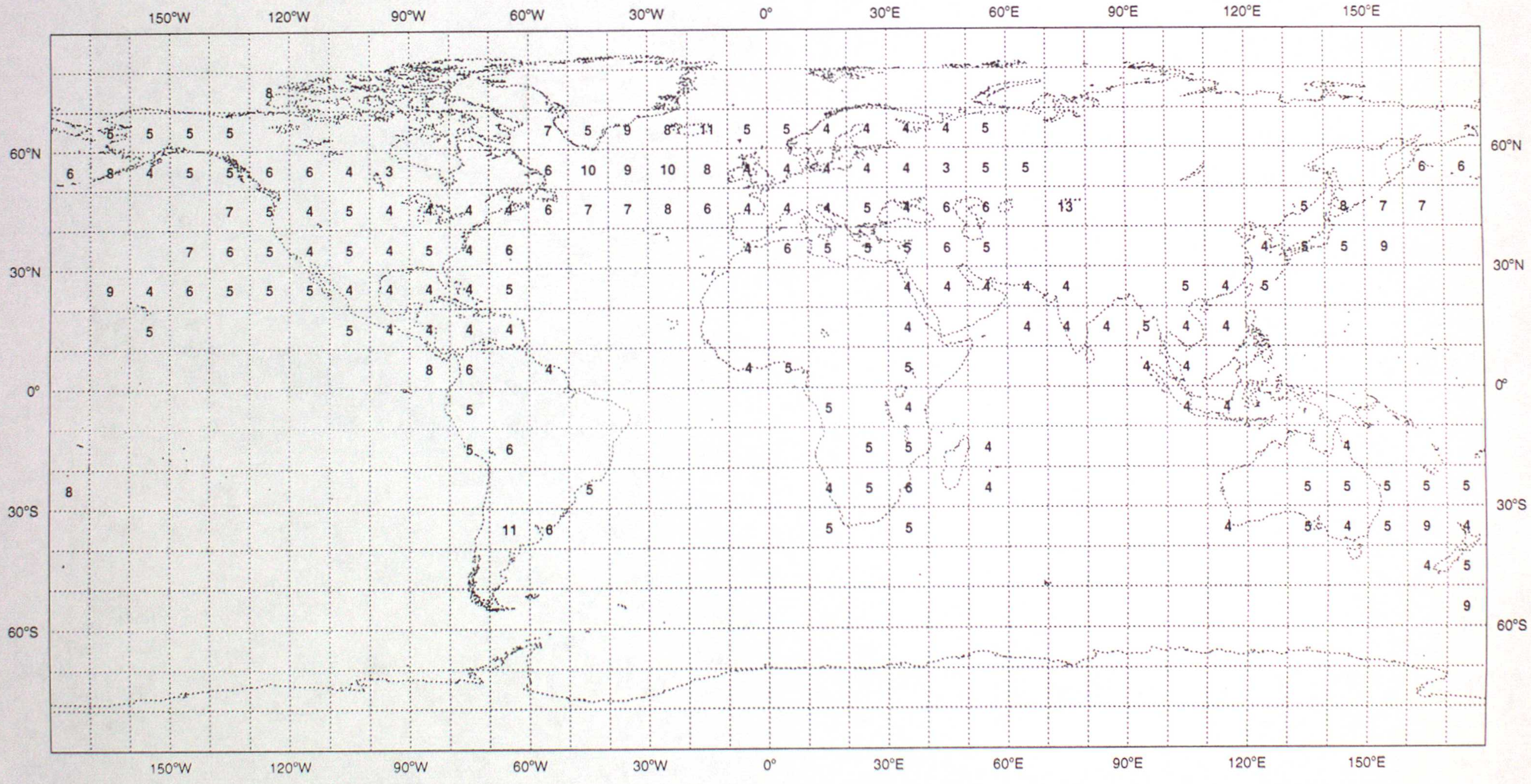

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 7b. AIRCRAFT 1000 - 301 hPa RMS O-B vector (ms-1). NOVEMBER 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

TABLE 5

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: November 2001

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 1000.0 - 30.0 hPa

Element monitored :GEOPOTENTIAL HEIGHT IN metres

Parameters monitored

:NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown duringperiod.

:% REJ :Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.

:SD :SD of difference of observations from background values at level shown excluding those with gross errors.

:BIAS :Mean difference of observations from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

:NUM LEVELS :Number of levels satisfying selection criteria.

GROSS ERROR LIMITS :Defined in Appendix I.1

SELECTION CRITERIA : ≥3 levels with ≥10 observations and ≥ 100 m weighted RMS.

ONLY THE WORST LEVEL IS SHOWN WITH UNWEIGHTED RMS

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	NUM LEVELS
20674	12	Z	50	73/ 80	6	4	144.6	255.3	293.4	6
23418	00	Z	50	65/ 57	24	2	94.0	137.5	166.5	4
33345	00	Z	70	50/ 31	19	1	69.0	-132.5	149.4	7
33631	00	Z	100	49/ 22	25	0	35.6	-114.5	119.9	6
33791	12	Z	150	48/ 33	16	0	34.5	-92.4	98.6	6
33837	00	Z	50	46/ 31	16	0	159.0	38.1	163.5	4
34247	12	Z	50	50/ 41	18	6	102.6	238.4	259.5	6
34300	00	Z	70	50/ 36	27	0	19.5	-136.7	138.1	5
42027	00	Z	1000	34/ 75	19	1	34.2	47.4	58.4	4
42027	12	Z	250	34/ 75	11	1	71.4	85.0	111.0	5
42101	12	Z	50	30/ 76	15	1	129.9	89.5	157.8	6
42182	00	Z	100	29/ 77	28	0	82.2	-88.8	121.0	4
42314	00	Z	30	27/ 95	11	0	141.7	209.9	253.3	6
42314	12	Z	150	27/ 95	18	1	77.2	-88.3	117.3	5
42361	12	Z	200	26/ 78	10	0	68.9	-85.3	109.7	4
42369	00	Z	100	27/ 81	20	0	96.8	-126.8	159.5	8
42369	12	Z	150	27/ 81	17	0	79.2	-83.4	115.0	5
42379	00	Z	30	27/ 83	12	0	187.5	126.2	226.0	4
42397	00	Z	200	27/ 88	22	0	53.1	-75.1	92.0	6
42397	12	Z	150	27/ 88	16	0	71.2	-68.1	98.5	4
42492	12	Z	150	26/ 85	21	0	106.5	-43.8	115.2	5
42647	12	Z	50	23/ 73	11	0	104.3	248.2	269.2	8
42667	00	Z	200	23/ 77	13	0	56.3	-97.5	112.6	4
42701	12	Z	100	23/ 85	16	0	99.4	-90.2	134.2	4
42724	12	Z	200	24/ 91	13	0	45.6	-116.0	124.6	4
42809	00	Z	150	23/ 88	28	0	99.6	-52.2	112.4	8
42971	00	Z	100	20/ 86	26	0	109.4	2.8	109.5	4
43003	00	Z	100	19/ 73	15	3	115.4	-51.5	126.4	6
43014	12	Z	400	20/ 75	26	0	57.2	27.1	63.3	6
43128	00	Z	200	17/ 78	27	0	76.3	-69.9	103.5	6
43128	12	Z	50	17/ 78	16	0	86.1	160.7	182.3	6
43150	00	Z	150	18/ 83	24	0	72.6	-72.5	102.6	4
43192	00	Z	200	15/ 74	21	0	89.4	-119.2	149.1	8
43192	12	Z	150	15/ 74	14	0	74.9	-88.2	115.7	4
43279	00	Z	200	13/ 80	23	0	69.3	-53.0	87.2	4
43295	00	Z	30	13/ 78	11	0	103.9	176.5	204.8	6
43346	00	Z	150	11/ 80	22	0	91.2	-56.6	107.4	4
43346	12	Z	50	11/ 80	11	0	131.0	115.9	174.9	6
43371	12	Z	150	8/ 77	25	0	102.7	-44.0	111.7	4
47185	00	Z	30	33/ 126	26	0	65.1	248.3	256.7	4
61223	12	Z	250	17/ -3	1	0	0.0	76.0	76.0	4
62378	12	Z	50	30/ 31	10	1	57.9	145.5	156.6	4
78970	12	Z	50	11/ -61	26	0	24.3	174.9	176.6	4
82332	12	Z	50	-3/ -60	1	0	0.0	198.0	198.0	4
83746	12	Z	30	-23/ -43	1	0	0.0	287.0	287.0	6
83971	12	Z	50	-30/ -51	3	0	15.5	162.0	162.7	4
89055	12	Z	300	-64/ -57	4	0	76.3	64.5	99.9	7
89512	12	Z	50	-71/ 12	12	0	98.5	216.0	237.4	5
89592	00	Z	70	-67/ 93	22	4	85.9	201.4	218.9	6
89592	12	Z	150	-67/ 93	12	0	59.2	106.7	122.0	6
91366	00	Z	50	9/ 168	26	3	92.2	263.1	278.8	7
96163	00	Z	400	-1/ 100	8	1	86.6	-24.0	89.9	9
96749	00	Z	50	-6/ 107	17	4	116.0	152.5	191.6	6

Figure 8. TEMP 500 hPa geopotential mean daily count. NOVEMBER 2001

All hours

Global average number of observations in 24 hours = 1161

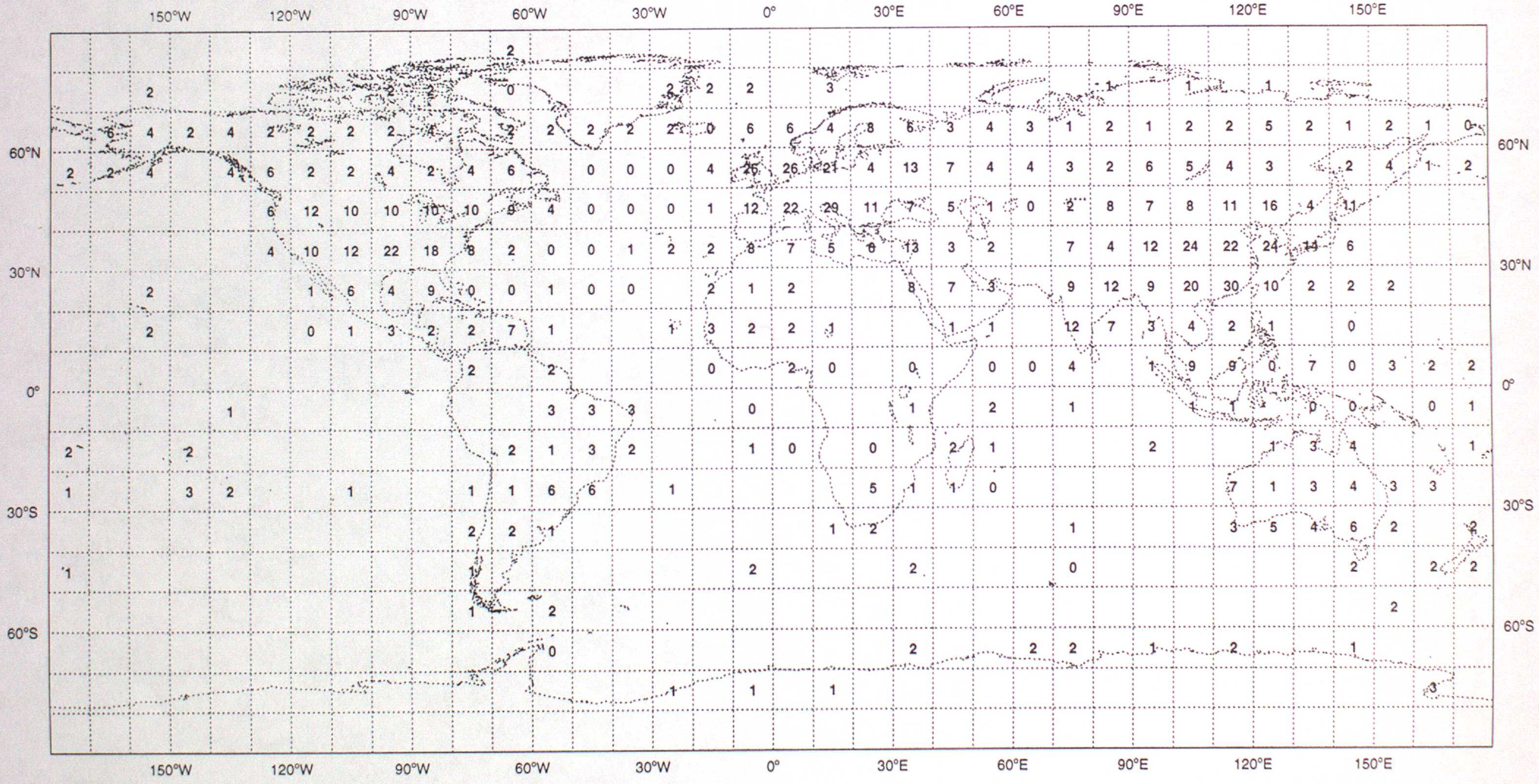

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

TABLE 6

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: November 2001

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 1000.0 - 100.0 hPa

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored

:NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:% REJ :Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.

:UBIAS,VBIAS :Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

:NUM LEVELS :Number of levels satisfying selection criteria.

GROSS ERROR LIMITS :Defined in Appendix I.2

SELECTION CRITERIA : $\geq$ 10 observations and $\geq$ 15 m s^{-1} RMS vector wind.

ONLY THE STANDARD LEVEL BETWEEN 1000 - 100 hPa WITH HIGHEST RMS IS SHOWN

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	% REJ	UBIAS	VBIAS	RMS	LEVELS
PSPIU	00	V	100	-5/ -81	27	0	100	0.0	-6.1	20.6	2
PSPIU	12	V	100	-5/ -81	28	0	100	3.4	-1.0	19.6	2
37789	00	V	250	40/ 44	21	0	9	5.2	-1.9	17.5	2
40582	00	V	150	29/ 48	19	0	5	-6.2	2.0	26.0	1
40754	12	V	250	36/ 51	12	0	8	5.5	-1.3	16.2	2
42182	12	V	200	29/ 77	23	0	100	-10.0	-2.1	18.9	2
42379	00	V	150	27/ 83	19	0	100	3.9	6.7	16.4	1
42379	12	V	100	27/ 83	10	0	100	9.9	6.8	19.2	1
42410	00	V	300	26/ 92	15	0	46	0.3	5.6	17.6	2
42410	12	V	300	26/ 92	10	0	70	3.1	9.9	21.5	2
42724	12	V	250	24/ 91	14	0	100	5.0	-3.9	18.2	1
44259	00	V	150	48/ 115	18	0	16	-9.9	3.8	28.7	2
57067	00	V	100	34/ 111	15	0	100	13.4	3.1	15.9	1
57067	12	V	100	34/ 111	18	0	100	12.5	1.2	15.2	1
59134	00	V	200	24/ 118	29	0	3	-1.7	-5.6	16.1	4
60656	12	V	200	28/ -8	15	0	66	-4.6	-6.3	19.3	1
62337	00	V	150	31/ 34	20	0	100	-6.1	8.5	17.2	1
62337	12	V	200	31/ 34	24	0	100	-5.3	13.0	16.7	1
62378	00	V	200	30/ 31	25	0	28	-14.2	-2.1	17.9	3
62378	12	V	200	30/ 31	26	0	42	-13.4	-2.2	23.3	4
68512	12	V	200	-30/ 18	14	0	100	-7.7	7.1	16.6	3
68816	12	V	300	-34/ 19	11	0	0	-10.7	4.6	17.3	2
71917	00	V	100	80/ -86	28	0	39	-3.6	5.3	17.3	1
89009	00	V	250	-90/ 0	29	0	100	3.3	-2.5	19.1	5
89009	12	V	200	-90/ 0	26	0	100	1.2	-3.4	16.6	3
98223	00	V	150	18/ 121	13	0	15	1.2	9.9	17.2	2

Figure 9. TEMP/PILOT 300 hPa wind mean daily count. NOVEMBER 2001

All hours

Global average number of observations in 24 hours = 1363

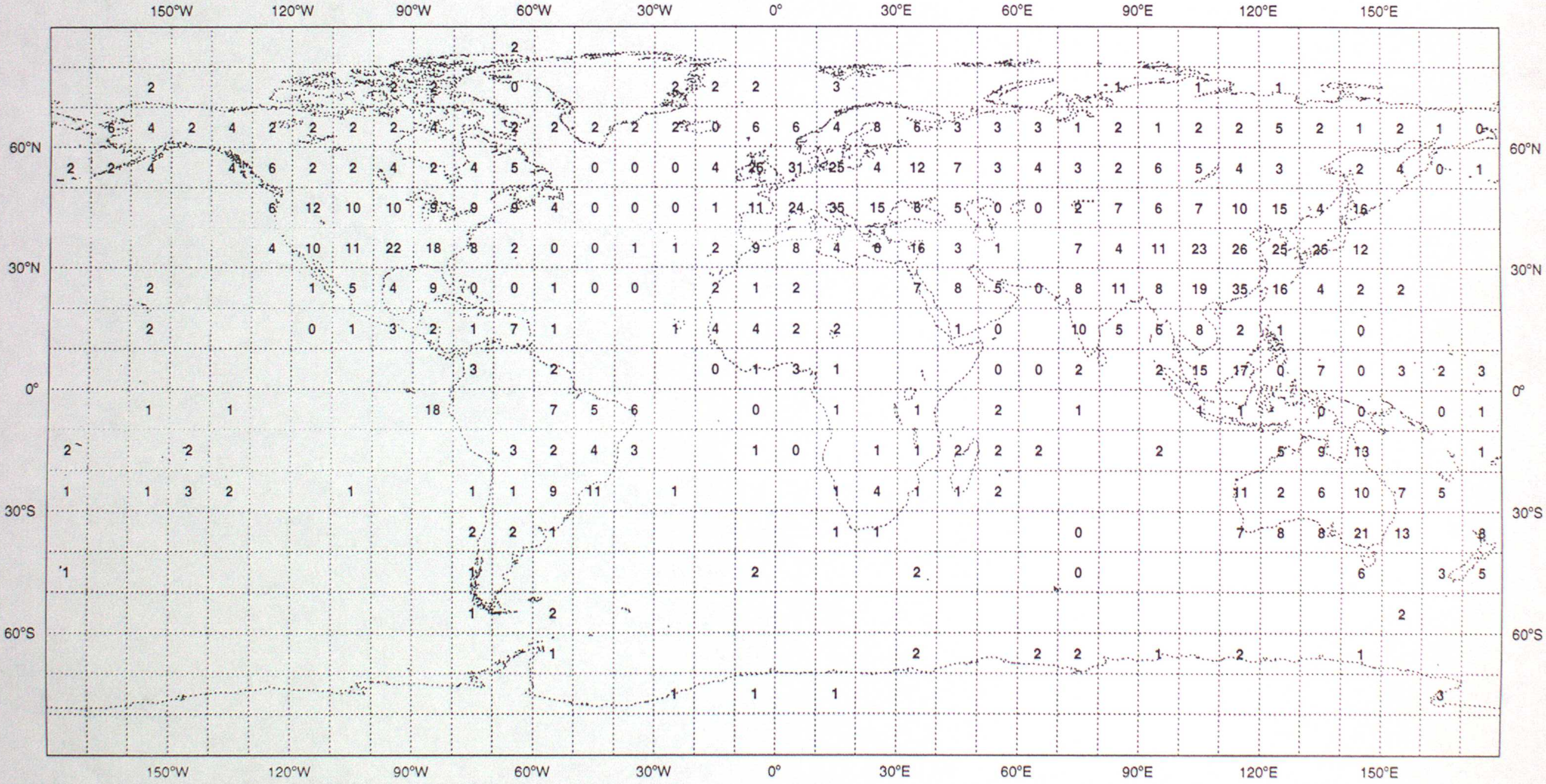

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
2
2 2 2 0 2 2 2 3 1 1 1
6 4 2 4 2 2 2 2 4 2 2 2 2 2 0 6 6 4 8 6 3 3 3 1 2 1 2 2 5 2 1 2 1 0
2 2 4 4 6 2 2 4 2 4 5 0 0 0 4 26 31 25 4 12 7 3 4 3 2 6 5 4 3 2 4 0 1
6 12 10 10 9 9 9 4 0 0 0 1 11 24 35 15 8 5 0 0 2 7 6 7 10 15 4 16
4 10 11 22 18 8 2 0 0 1 1 2 9 8 4 6 16 3 1 7 4 11 23 26 25 26 12
2 1 5 4 9 0 0 1 0 0 2 1 2 7 8 5 0 8 11 8 19 35 16 4 2 2
2 0 1 3 2 1 7 1 1 4 4 2 2 1 0 10 5 5 8 2 1 0
3 2 0 1 3 1 0 0 2 2 15 17 0 7 0 3 2 3
1 1 18 7 5 6 0 1 1 2 1 1 1 0 0 0 1
2 2 3 2 4 3 1 0 1 1 2 2 2 2 5 9 13 1
1 1 3 2 1 1 1 9 11 1 1 4 1 1 2 11 2 6 10 7 5
2 2 1 1 1 0 7 8 8 21 13 8
1 1 2 2 0 6 3 5
1 2 2
1 2 2 2 1 2 1
1 1 1 3

TABLE 7

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: November 2001

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 500.0 - 150.0 hPa
Element monitored		:WIND DIRECTION in degrees
Parameters monitored		
	:NUM OBS	:Average number of observations at all levels.
	:BIAS	:Mean difference of observations from background values from all levels.
	:MAX SPREAD	:(For observation - background values) Maximum absolute difference of SD at any level from SD at all levels
	:SD	:SD of difference of observations from background values at all levels.
SELECTION CRITERIA	:NUM OBS ≥ 5, and ABSOLUTE BIAS ≥ 10°, with SD < 30°, and MAX SPREAD < 10°	

WMO IDENT	OBS TIME	ELM	LAT/LONG	NUM OBS	BIAS	MAX SPREAD	SD
11722	00	DD	49/ 17	24	-11.3	1.5	13.1
11722	12	DD	49/ 17	23	-10.7	3.9	9.9
29612	12	DD	55/ 78	23	22.1	1.5	6.1
42410	00	DD	26/ 92	13	-10.3	7.0	19.8
42667	00	DD	23/ 77	11	-21.6	5.9	11.6
48565	00	DD	8/ 98	15	16.7	8.4	19.4
58968	00	DD	25/ 122	30	12.3	2.2	6.2
58968	12	DD	25/ 122	28	12.5	1.8	6.0
62337	00	DD	31/ 34	23	-17.3	2.0	5.8
62337	12	DD	31/ 34	24	-17.0	2.0	6.5
68816	12	DD	-34/ 19	9	-10.7	8.6	18.6
71924	00	DD	75/ -95	23	-11.3	5.1	23.4
91366	00	DD	9/ 168	16	13.0	9.7	23.7

MONITORING OF SATELLITE WINDS

MONITORING CENTRE: BRACKNELL

MONTH: November 2001

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from GOES-8, GOES-10, METEOSAT-5, METEOSAT-7, GMS-5, INSAT.

Standard of comparison :Background field from UKMO global model.

Selection Criteria :number of observations > 10.

Data Extracted :Layer 701 - 1000 hPa
401 - 700 hPa
101 - 400 hPa

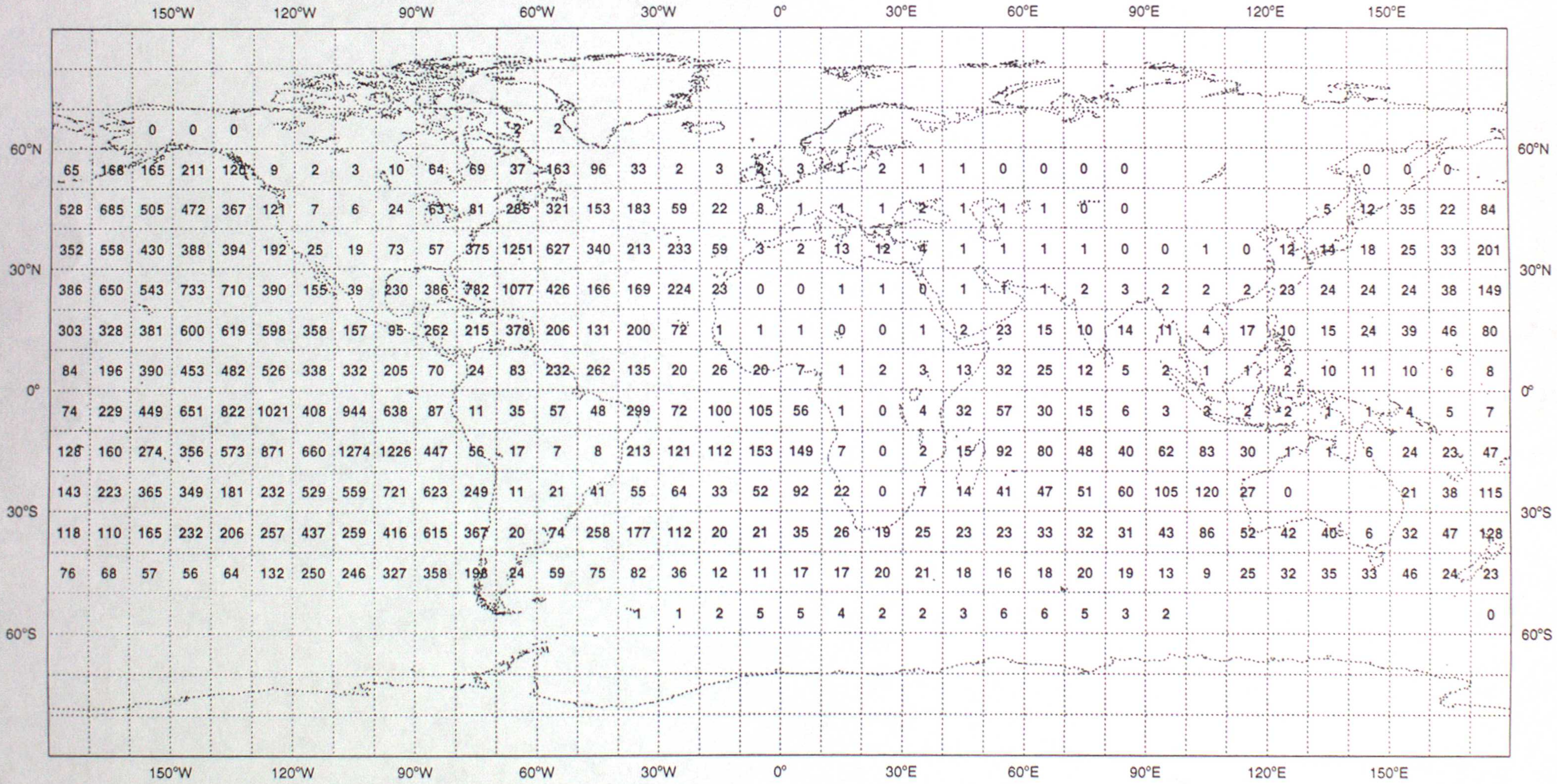
:Mean wind

:Mean observation minus background vector wind differences

:Mean observation minus background speed differences

:RMS of observation minus background vector differences

Figure 10. SATOB 701 - 1000 hPa mean daily count. NOVEMBER 2001
Global average number of observations in 24 hours = 53878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60°N 30°N 0° 30°S 60°S
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65 168 165 211 120 9 2 3 10 64 69 37 163 96 33 2 3 2 3 1 2 1 1 0 0 0 0 0 0 0
528 685 505 472 367 121 7 6 24 63 81 285 321 153 183 59 22 8 1 1 1 2 1 1 1 0 0 5 12 35 22 84
352 558 430 388 394 192 25 19 73 57 375 1251 627 340 213 233 59 3 2 13 12 4 1 1 1 1 0 0 1 0 12 14 18 25 33 201
386 650 543 733 710 390 155 39 230 386 782 1077 426 166 169 224 23 0 0 1 1 0 1 1 1 2 3 2 2 2 23 24 24 24 38 149
303 328 381 600 619 598 358 157 95 262 215 378 206 131 200 72 1 1 1 0 0 1 2 23 15 10 14 11 4 17 10 15 24 39 46 80
84 196 390 453 482 526 338 332 205 70 24 83 232 262 135 20 26 20 7 1 2 3 13 32 25 12 5 2 1 1 2 10 11 10 6 8
74 229 449 651 822 1021 408 944 638 87 11 35 57 48 299 72 100 105 56 1 0 4 32 57 30 15 6 3 3 2 2 1 1 4 5 7
128 160 274 356 573 871 660 1274 1226 447 56 17 7 8 213 121 112 153 149 7 0 2 15 92 80 48 40 62 83 30 1 1 6 24 23 47
143 223 365 349 181 232 529 559 721 623 249 11 21 41 55 64 33 52 92 22 0 7 14 41 47 51 60 105 120 27 0 21 38 115
118 110 165 232 206 257 437 259 416 615 367 20 74 258 177 112 20 21 35 26 19 25 23 23 33 32 31 43 86 52 42 40 6 32 47 128
76 68 57 56 64 132 250 246 327 358 198 24 59 75 82 36 12 11 17 17 20 21 18 16 18 20 19 13 9 25 32 35 33 46 24 23
1 1 2 5 5 4 2 2 3 6 6 5 3 2 0

Figure 11. SATOB 701 - 1000 hPa vector mean wind. NOVEMBER 2001

All observations

Arrows are plotted where greater than 10 obs are present

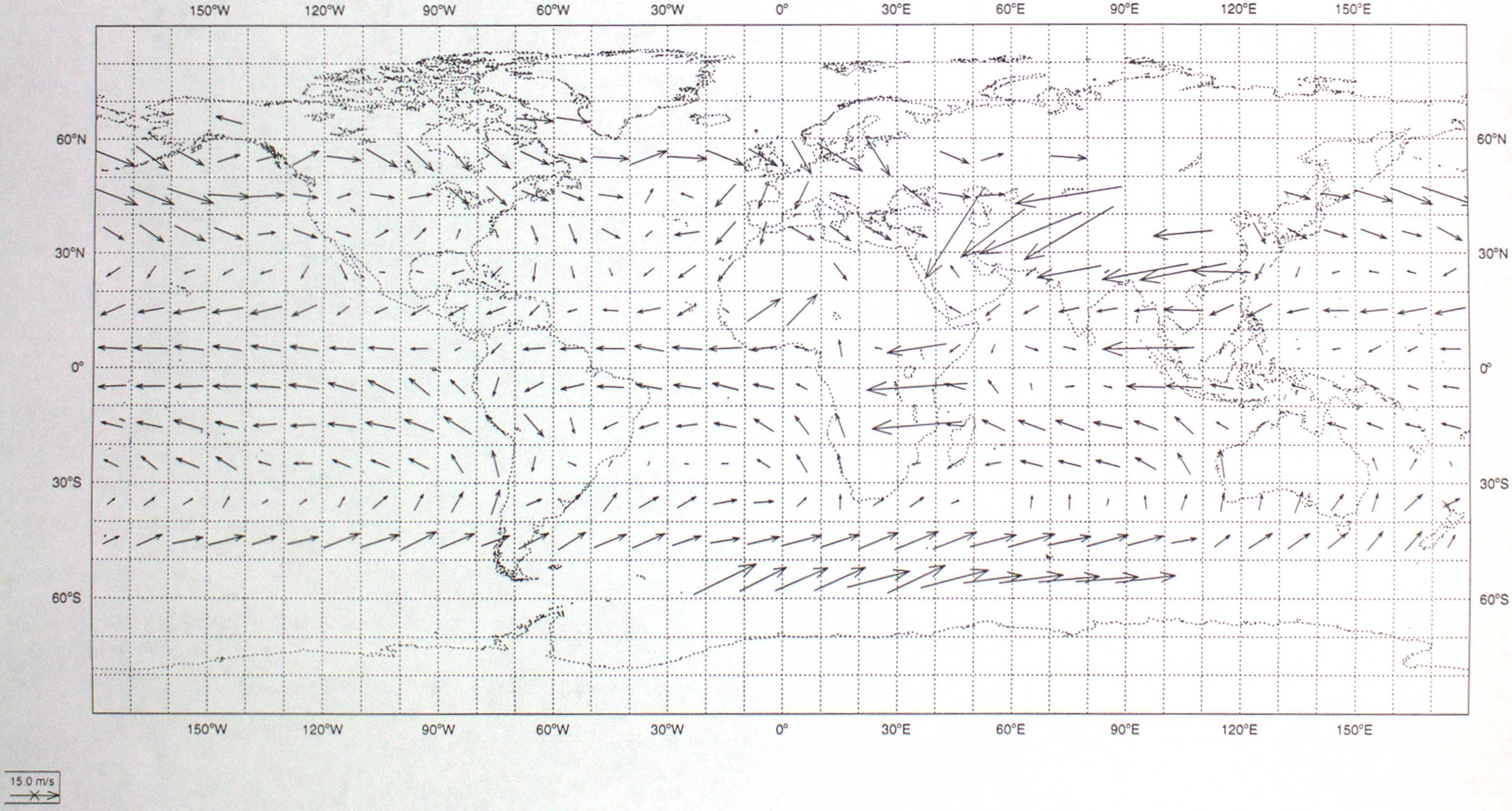
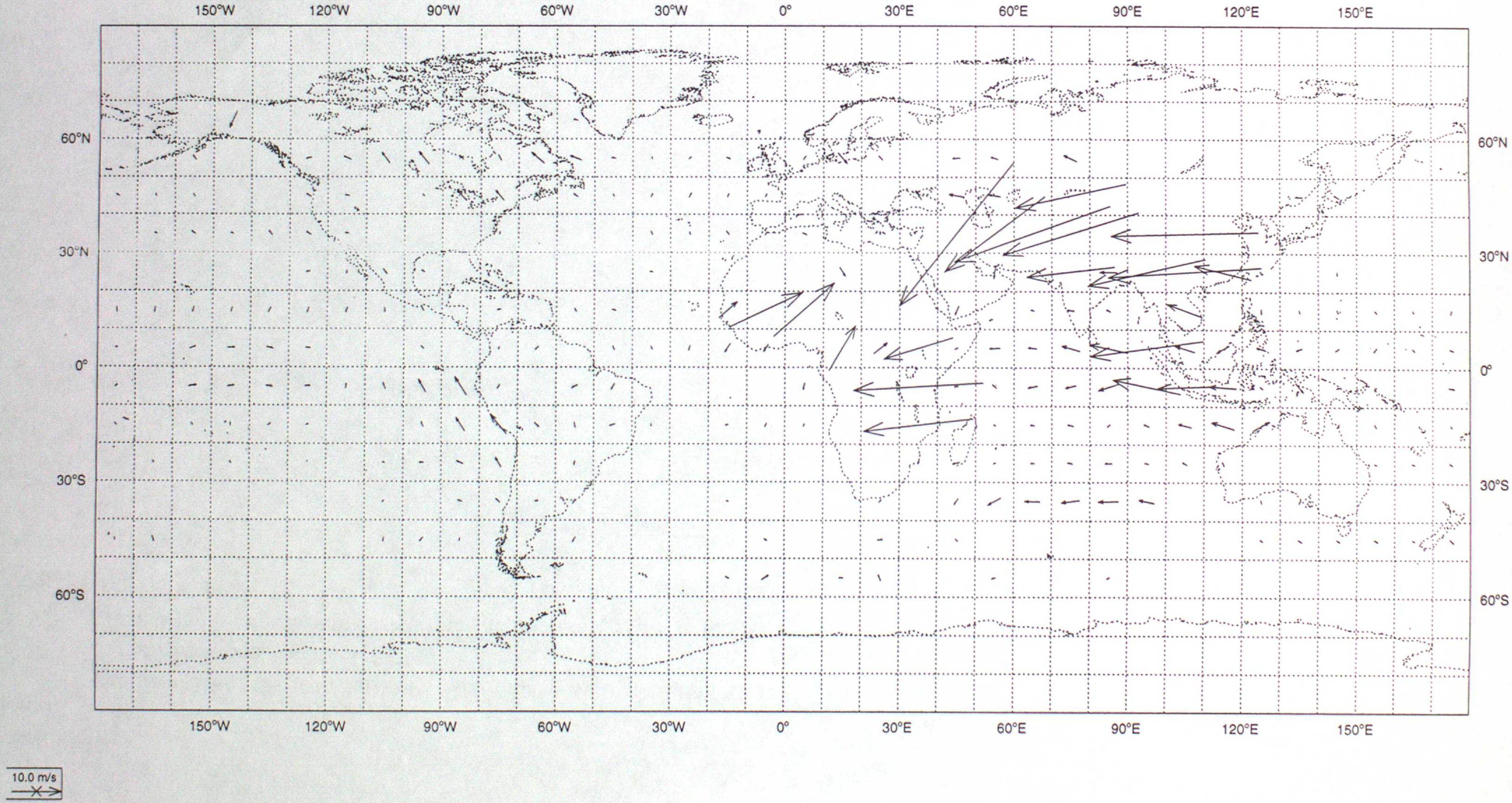

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0 m/s

Figure 12. SATOB 701 - 1000 hPa vector wind differences. NOVEMBER 2001

All observations

Arrows are plotted where greater than 10 obs are present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120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0 m/s

Figure 13. SATOB 701 - 1000 hPa mean O-B speed differences (ms-1). NOVEMBER 2001

All observations

Values are plotted where greater than 10 obs are present

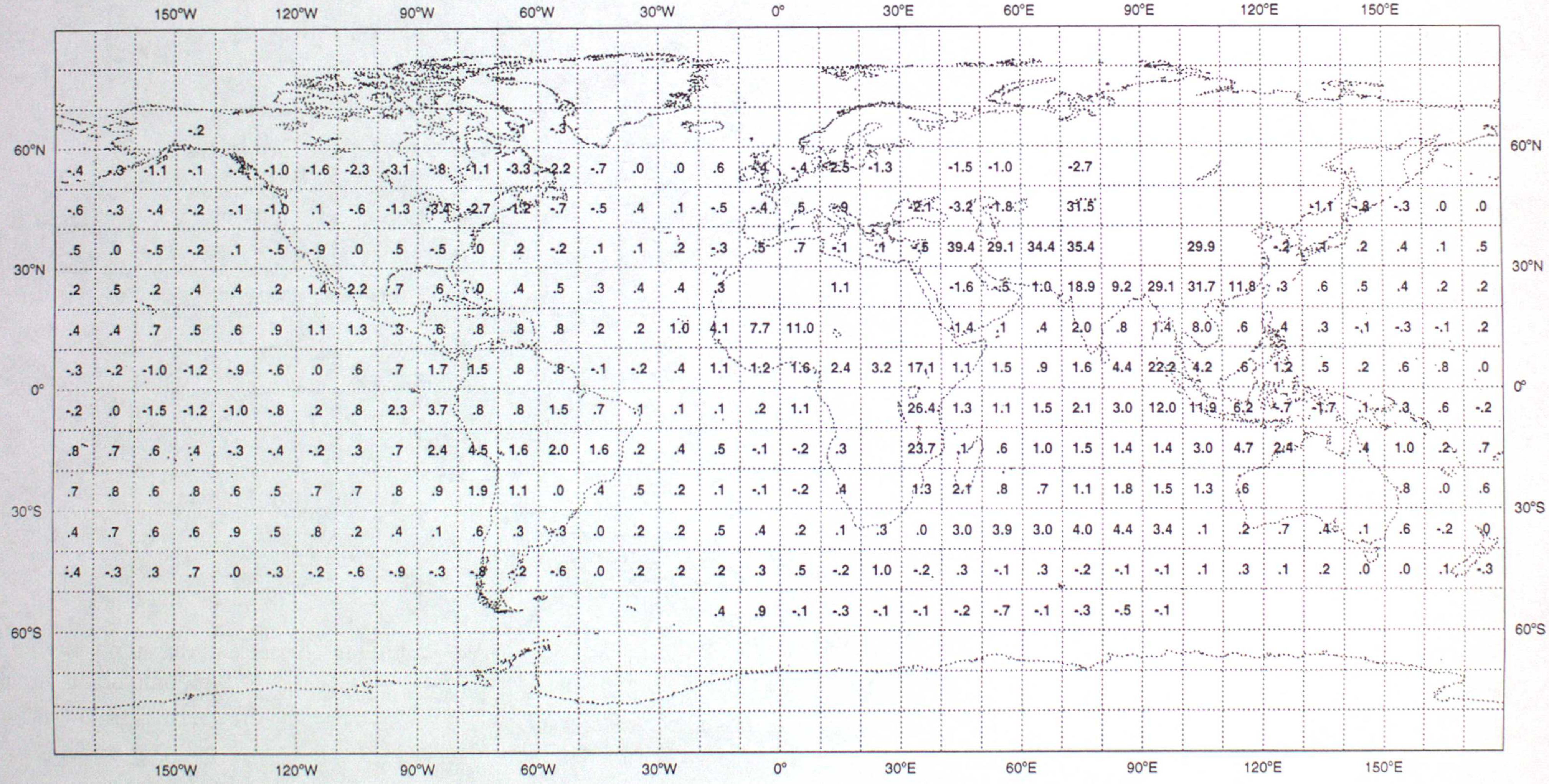

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
-.2 -.1 -.3
-.4 -.3 -1.1 -.1 -.4 -1.0 -1.6 -2.3 -3.1 -.8 -1.1 -3.3 -2.2 -.7 .0 .0 .6 -.4 -.4 -2.5 -1.3 -1.5 -1.0 -2.7
-.6 -.3 -.4 -.2 -.1 -1.0 .1 -.6 -1.3 -3.4 -2.7 -1.2 -.7 -.5 .4 .1 -.5 -.4 .5 .9 -2.1 -3.2 -1.8 31.5 -1.1 -.8 -.3 .0 .0
.5 .0 -.5 -.2 .1 -.5 -.9 .0 .5 -.5 .0 .2 -.2 .1 .1 .2 -.3 .5 .7 -.1 .1 .5 39.4 29.1 34.4 35.4 29.9 -.2 -.1 .2 .4 .1 .5
.2 .5 .2 .4 .4 .2 1.4 2.2 .7 .6 .0 .4 .5 .3 .4 .4 .3 1.1 -1.6 -.5 1.0 18.9 9.2 29.1 31.7 11.8 .3 .6 .5 .4 .2 .2
.4 .4 .7 .5 .6 .9 1.1 1.3 .3 .6 .8 .8 .8 .2 .2 1.0 4.1 7.7 11.0 -1.4 .1 .4 2.0 .8 1.4 8.0 .6 .4 .3 -.1 -.3 -.1 .2
-.3 -.2 -1.0 -1.2 -.9 -.6 .0 .6 .7 1.7 1.5 .8 .8 -.1 -.2 .4 1.1 -1.2 -1.6 2.4 3.2 17.1 1.1 1.5 .9 1.6 4.4 22.2 4.2 .6 1.2 .5 .2 .6 .8 .0
-.2 .0 -1.5 -1.2 -1.0 -.8 .2 .8 2.3 3.7 .8 .8 1.5 .7 .1 .1 .1 .2 1.1 26.4 1.3 1.1 1.5 2.1 3.0 12.0 11.9 6.2 -.7 -1.7 .1 .3 .6 -.2
.8 .7 .6 .4 -.3 -.4 -.2 .3 .7 2.4 4.5 1.6 2.0 1.6 .2 .4 .5 -.1 -.2 .3 23.7 .1 .6 1.0 1.5 1.4 1.4 3.0 4.7 2.4 .4 1.0 .2 .7
.7 .8 .6 .8 .6 .5 .7 .7 .8 .9 1.9 1.1 .0 .4 .5 .2 .1 -.1 -.2 .4 1.3 2.1 .8 .7 1.1 1.8 1.5 1.3 .6 .8 .0 .6
.4 .7 .6 .6 .9 .5 .8 .2 .4 .1 .6 .3 -.3 .0 .2 .2 .5 .4 .2 .1 .3 .0 3.0 3.9 3.0 4.0 4.4 3.4 .1 .2 .7 .4 .1 .6 -.2 .0
-.4 -.3 .3 .7 .0 -.3 -.2 -.6 -.9 -.3 -.8 -.2 -.6 .0 .2 .2 .2 .3 .5 -.2 1.0 -.2 .3 -.1 .3 -.2 -.1 -.1 .1 .3 .1 .2 .0 .0 .1 -.3
.4 .9 -.1 -.3 -.1 -.1 -.2 -.7 -.1 -.3 -.5 -.1

Figure 14. SATOB 701 - 1000 hPa RMS O-B vector differences (ms-1). NOVEMBER 2001

All observations

Values are plotted where greater than 10 obs are present

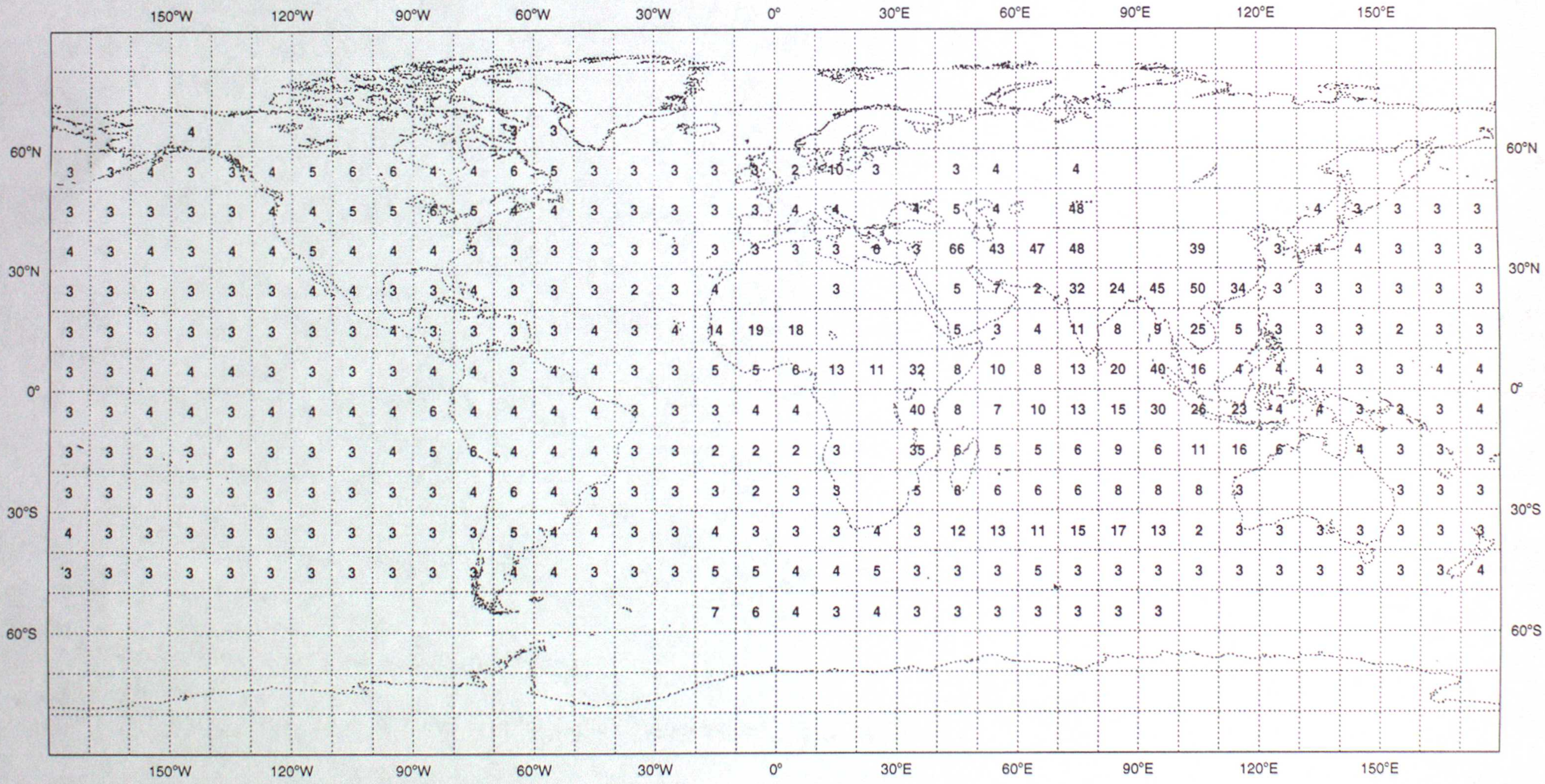
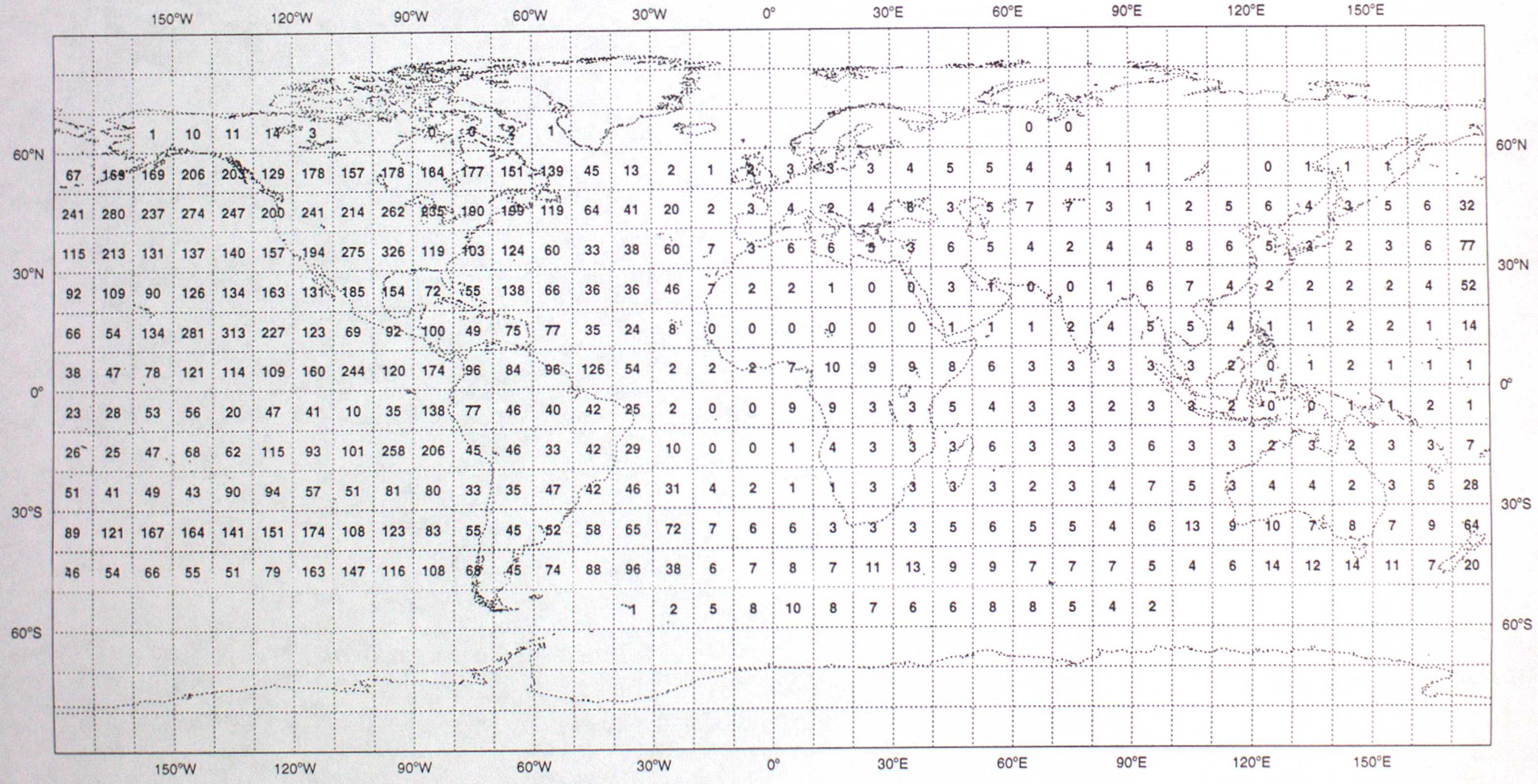

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
4 3 3
3 3 4 3 3 4 5 6 6 4 4 6 5 3 3 3 3 3 2 10 3 3 4 4
3 3 3 3 3 4 4 5 5 6 5 4 4 3 3 3 3 3 4 4 4 5 4 48 4 3 3 3 3
4 3 4 3 4 4 5 4 4 4 3 3 3 3 3 3 3 3 3 6 3 66 43 47 48 39 3 4 4 3 3 3
3 3 3 3 3 3 4 4 3 3 4 3 3 3 2 3 4 3 5 7 2 32 24 45 50 34 3 3 3 3 3 3
3 3 3 3 3 3 3 3 4 3 3 3 3 4 3 4 14 19 18 5 3 4 11 8 9 25 5 3 3 3 2 3 3
3 3 4 4 4 3 3 3 3 4 4 3 4 4 3 3 5 5 6 13 11 32 8 10 8 13 20 40 16 4 4 4 3 3 4 4
3 3 4 4 3 4 4 4 4 6 4 4 4 4 3 3 3 4 4 40 8 7 10 13 15 30 26 23 4 4 3 3 3 4
3 3 3 3 3 3 3 3 4 5 6 4 4 4 3 3 2 2 2 3 35 6 5 5 6 9 6 11 16 6 4 3 3 3
3 3 3 3 3 3 3 3 3 3 4 6 4 3 3 3 3 2 3 3 5 8 6 6 6 8 8 8 3 3 3 3
4 3 3 3 3 3 3 3 3 3 3 5 4 4 3 3 4 3 3 3 4 3 12 13 11 15 17 13 2 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3 3 4 4 3 3 3 5 5 4 4 5 3 3 3 5 3 3 3 3 3 3 3 3 3 3 3 4
7 6 4 3 4 3 3 3 3 3 3 3

Figure 15. SATOB 401 - 700 hPa mean daily count. NOVEMBER 2001
Global average number of observations in 24 hours = 19410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60°N 30°N 0° 30°S 60°S
1 10 11 14 3 0 0 2 1 0 0
67 169 169 206 203 129 178 157 178 164 177 151 139 45 13 2 1 2 3 3 3 4 5 5 4 4 1 1 0 1 1 1
241 280 237 274 247 200 241 214 262 235 190 199 119 64 41 20 2 3 4 2 4 8 3 5 7 7 3 1 2 5 6 4 3 5 6 32
115 213 131 137 140 157 194 275 326 119 103 124 60 33 38 60 7 3 6 6 5 3 6 5 4 2 4 4 8 6 5 3 2 3 6 77
92 109 90 126 134 163 131 185 154 72 55 138 66 36 36 46 7 2 2 1 0 0 3 1 0 0 1 6 7 4 2 2 2 2 4 52
66 54 134 281 313 227 123 69 92 100 49 75 77 35 24 8 0 0 0 0 0 0 1 1 1 2 4 5 5 4 1 1 2 2 1 14
38 47 78 121 114 109 160 244 120 174 96 84 96 126 54 2 2 2 7 10 9 9 8 6 3 3 3 3 3 2 0 1 2 1 1 1
23 28 53 56 20 47 41 10 35 138 77 46 40 42 25 2 0 0 9 9 3 3 5 4 3 3 2 3 2 2 0 0 1 1 2 1
26 25 47 68 62 115 93 101 258 206 45 46 33 42 29 10 0 0 1 4 3 3 3 6 3 3 3 6 3 3 2 3 2 3 3 7
51 41 49 43 90 94 57 51 81 80 33 35 47 42 46 31 4 2 1 1 3 3 3 3 2 3 4 7 5 3 4 4 2 3 5 28
89 121 167 164 141 151 174 108 123 83 55 45 52 58 65 72 7 6 6 3 3 3 5 6 5 5 4 6 13 9 10 7 8 7 9 64
46 54 66 55 51 79 163 147 116 108 68 45 74 88 96 38 6 7 8 7 11 13 9 9 7 7 7 5 4 6 14 12 14 11 7 20
1 2 5 8 10 8 7 6 6 8 8 5 4 2

Figure 16. SATOB 401 - 700 hPa vector mean wind. NOVEMBER 2001

All observations

Arrows are plotted where greater than 10 obs are present

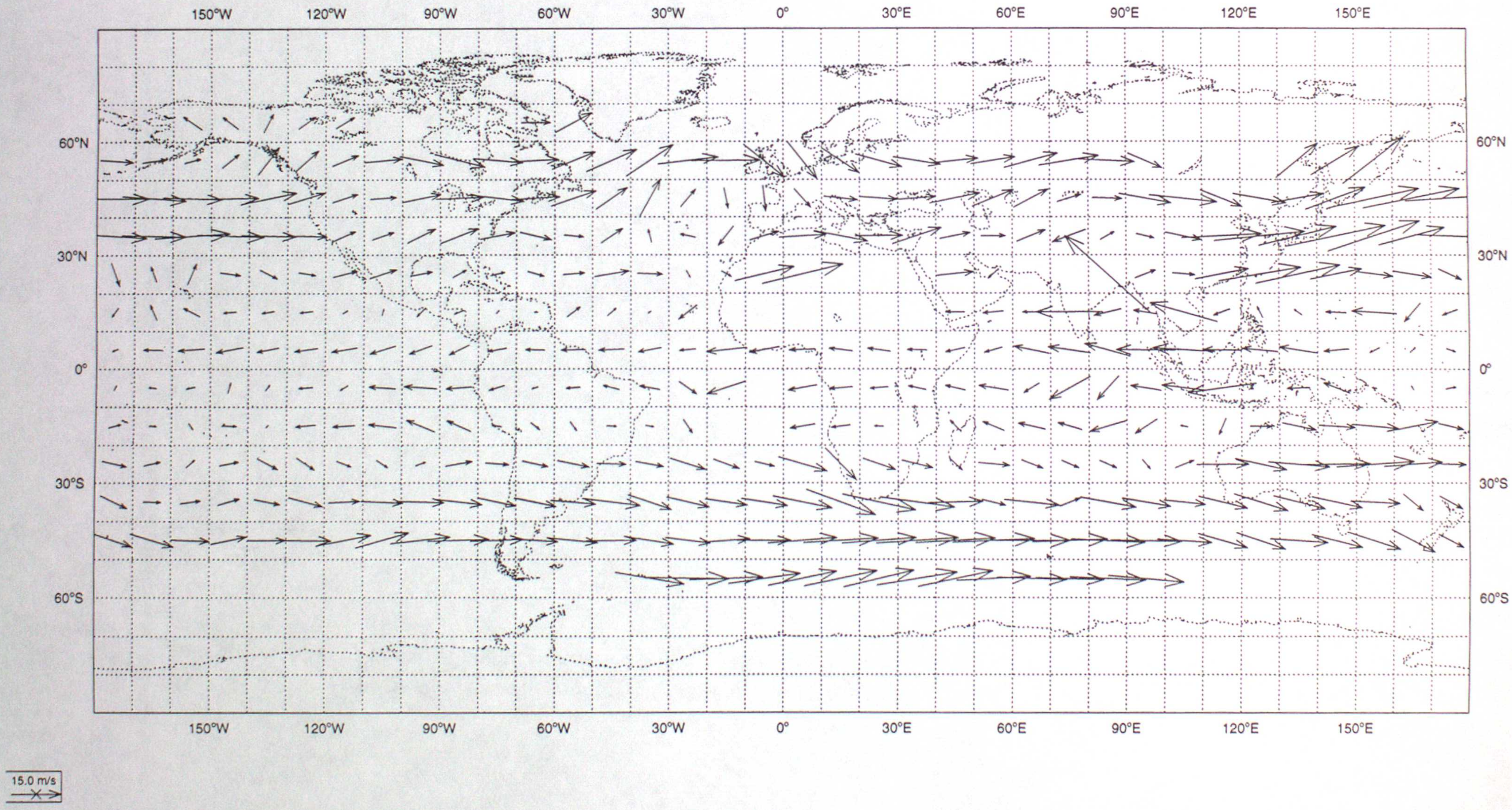

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0 m/s

Figure 17. SATOB 401 - 700 hPa vector wind differences. NOVEMBER 2001

All observations

Arrows are plotted where greater than 10 obs are present

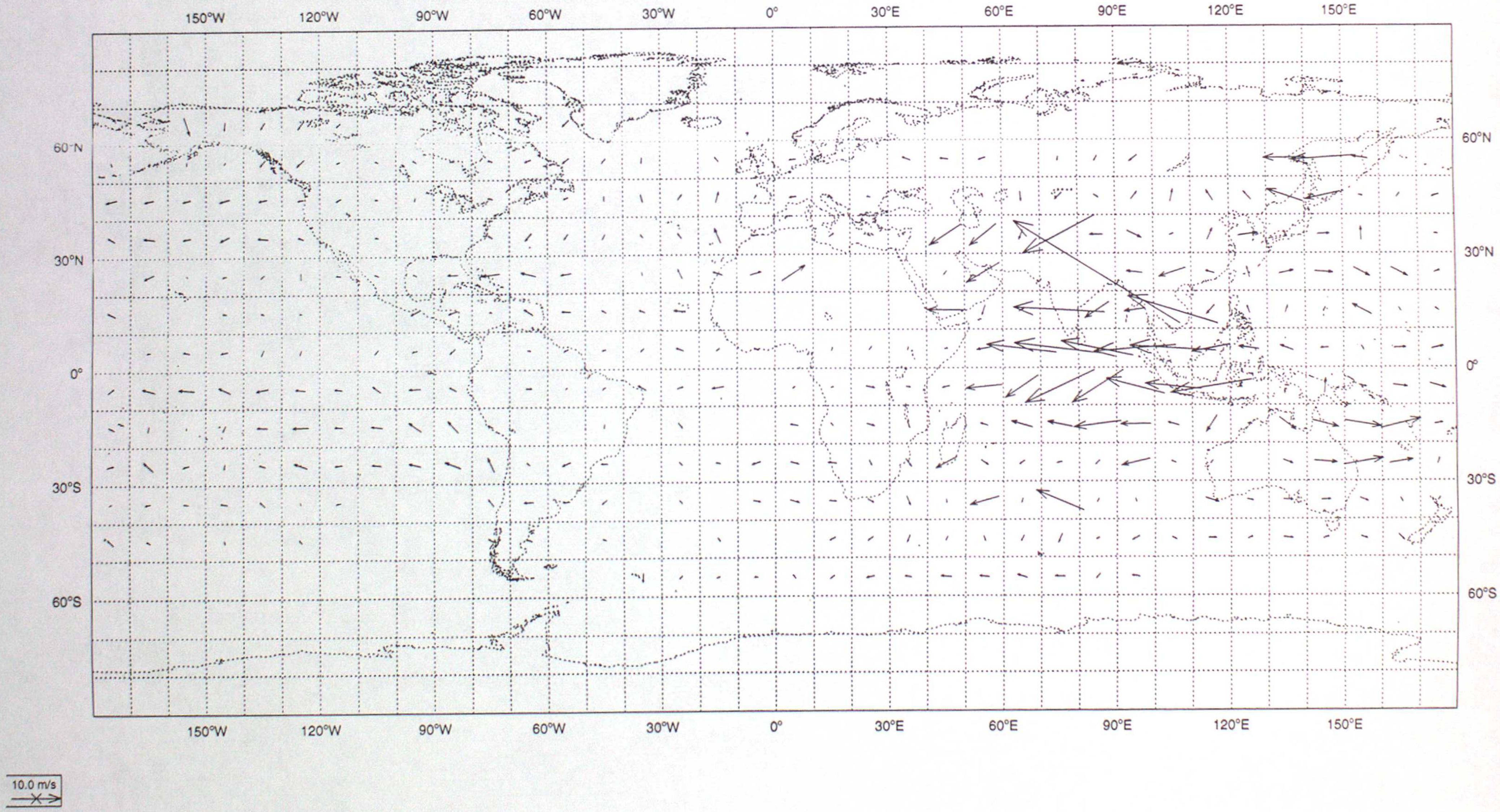

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0 m/s

Figure 18. SATOB 401 - 700 hPa mean O-B speed differences (ms-1). NOVEMBER 2001

All observations

Values are plotted where greater than 10 obs are present

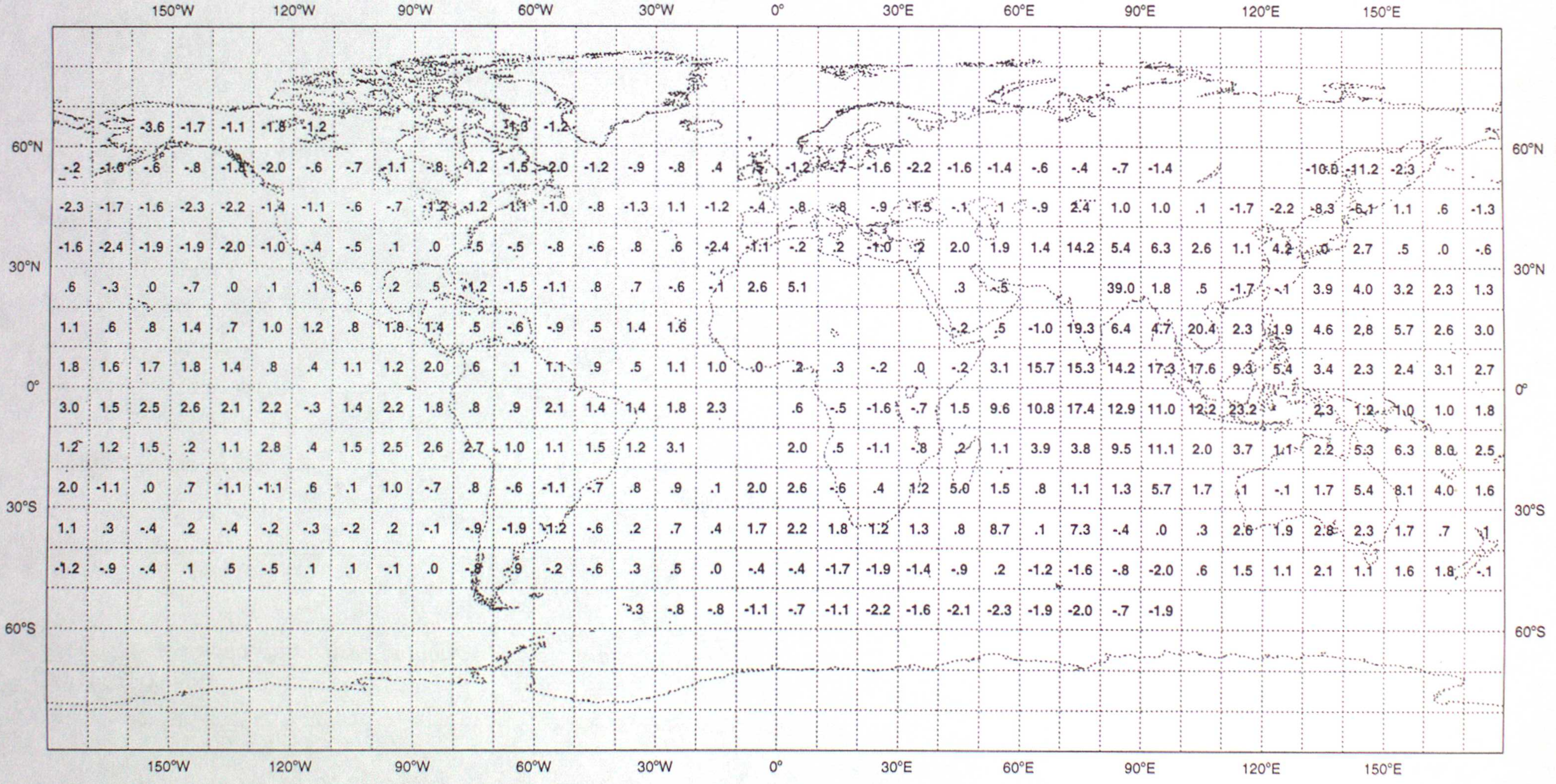
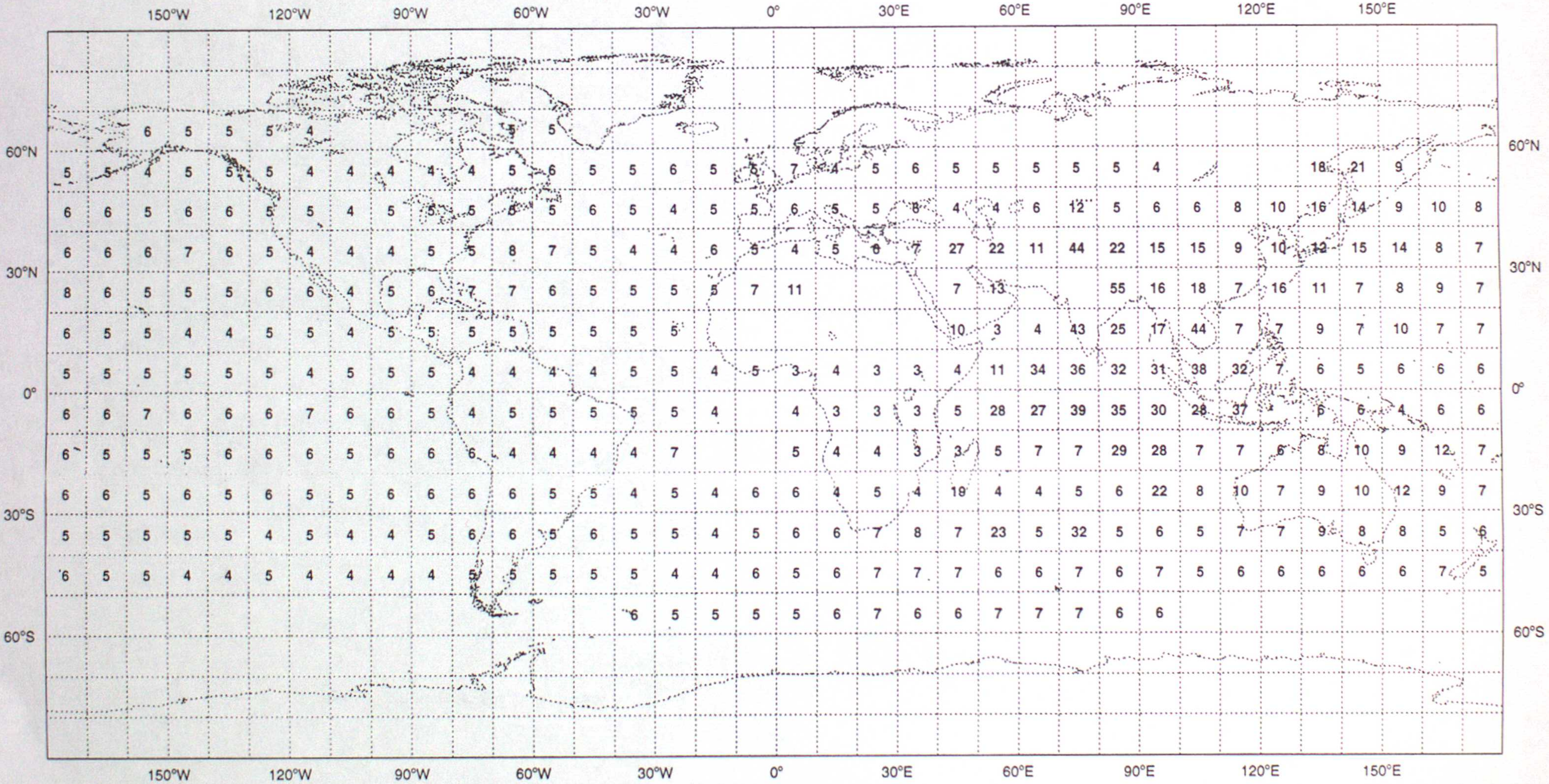

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
-3.6 -1.7 -1.1 -1.8 -1.2 -1.3 -1.2
-.2 -1.6 -.6 -.8 -1.8 -2.0 -.6 -.7 -1.1 -.8 -1.2 -1.5 -2.0 -1.2 -.9 -.8 .4 -.5 -1.2 -.7 -1.6 -2.2 -1.6 -1.4 -.6 -.4 -.7 -1.4 -10.0 -11.2 -2.3
-2.3 -1.7 -1.6 -2.3 -2.2 -1.4 -1.1 -.6 -.7 -1.2 -1.2 -1.1 -1.0 -.8 -1.3 1.1 -1.2 -.4 -.8 -.8 -.9 -1.5 -.1 .1 -.9 2.4 1.0 1.0 .1 -1.7 -2.2 -8.3 -6.1 1.1 .6 -1.3
-1.6 -2.4 -1.9 -1.9 -2.0 -1.0 -.4 -.5 .1 .0 .5 -.5 -.8 -.6 .8 .6 -2.4 -1.1 -.2 .2 -1.0 .2 2.0 1.9 1.4 14.2 5.4 6.3 2.6 1.1 4.2 .0 2.7 .5 .0 -.6
.6 -.3 .0 -.7 .0 .1 .1 -.6 .2 .5 -1.2 -1.5 -1.1 .8 .7 -.6 -.1 2.6 5.1 .3 -.5 39.0 1.8 .5 -1.7 -.1 3.9 4.0 3.2 2.3 1.3
1.1 .6 .8 1.4 .7 1.0 1.2 .8 1.8 1.4 .5 -.6 -.9 .5 1.4 1.6 -.2 .5 -1.0 19.3 6.4 4.7 20.4 2.3 1.9 4.6 2.8 5.7 2.6 3.0
1.8 1.6 1.7 1.8 1.4 .8 .4 1.1 1.2 2.0 .6 .1 1.1 .9 .5 1.1 1.0 .0 .2 .3 -.2 .0 -.2 3.1 15.7 15.3 14.2 17.3 17.6 9.3 5.4 3.4 2.3 2.4 3.1 2.7
3.0 1.5 2.5 2.6 2.1 2.2 -.3 1.4 2.2 1.8 .8 .9 2.1 1.4 1.4 1.8 2.3 .6 -.5 -1.6 -.7 1.5 9.6 10.8 17.4 12.9 11.0 12.2 23.2 2.3 1.2 1.0 1.0 1.8
1.2 1.2 1.5 .2 1.1 2.8 .4 1.5 2.5 2.6 2.7 1.0 1.1 1.5 1.2 3.1 2.0 .5 -1.1 -.8 .2 1.1 3.9 3.8 9.5 11.1 2.0 3.7 1.1 2.2 5.3 6.3 8.0 2.5
2.0 -1.1 .0 .7 -1.1 -1.1 .6 .1 1.0 -.7 .8 -.6 -1.1 -.7 .8 .9 .1 2.0 2.6 -.6 .4 1.2 5.0 1.5 .8 1.1 1.3 5.7 1.7 .1 -.1 1.7 5.4 8.1 4.0 1.6
1.1 .3 -.4 .2 -.4 -.2 -.3 -.2 .2 -.1 -.9 -1.9 1.2 -.6 .2 .7 .4 1.7 2.2 1.8 1.2 1.3 .8 8.7 .1 7.3 -.4 .0 .3 2.6 1.9 2.8 2.3 1.7 .7 .1
-1.2 -.9 -.4 .1 .5 -.5 .1 .1 -.1 .0 -.8 -.9 -.2 -.6 .3 .5 .0 -.4 -.4 -1.7 -1.9 -1.4 -.9 .2 -1.2 -1.6 -.8 -2.0 .6 1.5 1.1 2.1 1.1 1.6 1.8 -.1
-.3 -.8 -.8 -1.1 -.7 -1.1 -2.2 -1.6 -2.1 -2.3 -1.9 -2.0 -.7 -1.9

Figure 19. SATOB 401 - 700 hPa RMS O-B vector differences (ms-1). NOVEMBER 2001

All observations

Values are plotted where greater than 10 obs are present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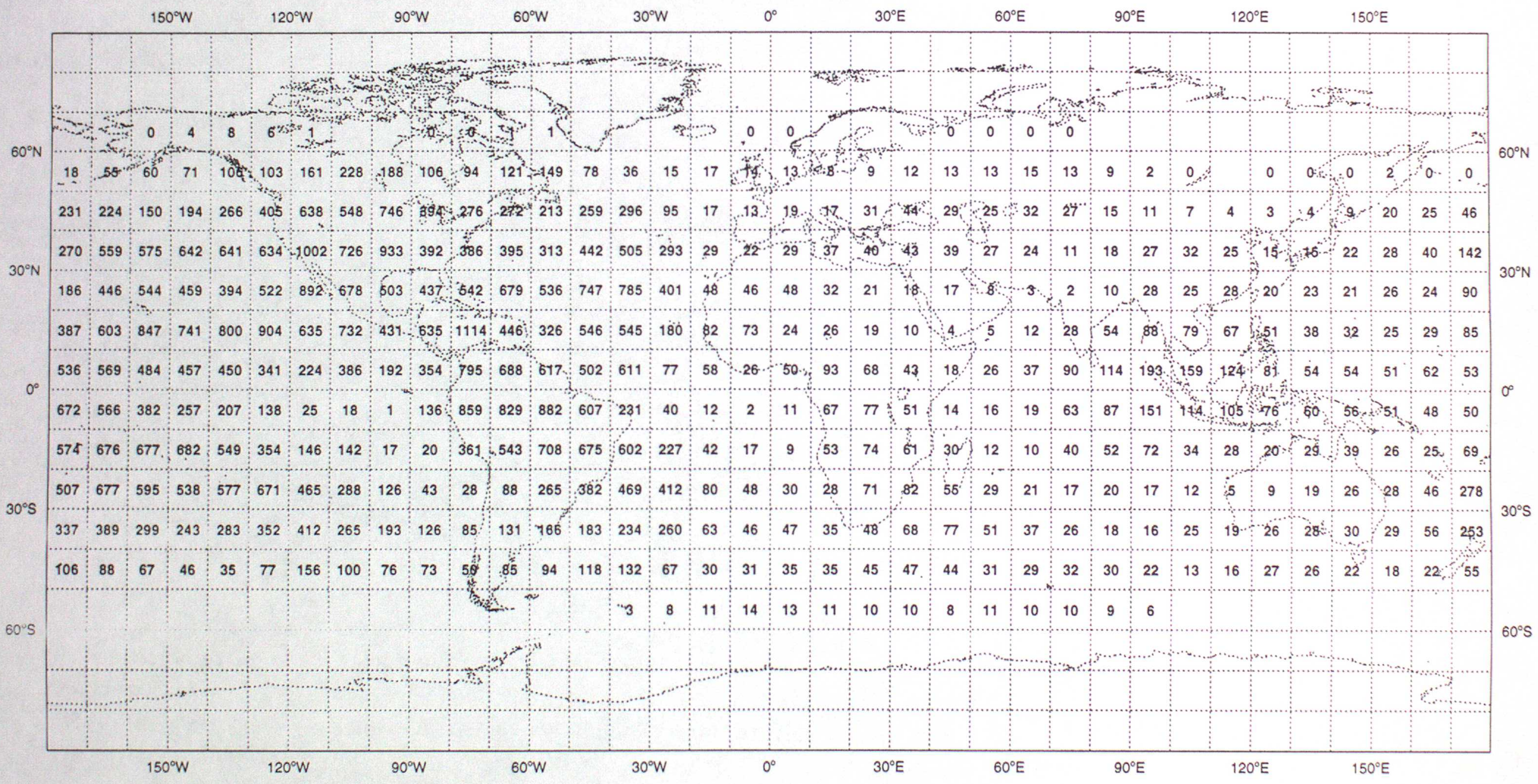
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
6 5 5 5 4 5 5
5 5 4 5 5 5 4 4 4 4 4 5 6 5 5 6 5 5 7 4 5 6 5 5 5 5 5 4 18 21 9
6 6 5 6 6 5 5 4 5 5 5 5 6 5 4 5 5 6 5 5 8 4 4 6 12 5 6 6 8 10 16 14 9 10 8
6 6 6 7 6 5 4 4 4 5 5 8 7 5 4 4 6 5 4 5 6 7 27 22 11 44 22 15 15 9 10 12 15 14 8 7
8 6 5 5 5 6 6 4 5 6 7 7 6 5 5 5 5 7 11 7 13 55 16 18 7 16 11 7 8 9 7
6 5 5 4 4 5 5 4 5 5 5 5 5 5 5 5 10 3 4 43 25 17 44 7 7 9 7 10 7 7
5 5 5 5 5 5 4 5 5 5 4 4 4 4 5 5 4 5 3 4 3 3 4 11 34 36 32 31 38 32 7 6 5 6 6 6
6 6 7 6 6 6 7 6 6 5 4 5 5 5 5 5 4 4 3 3 3 5 28 27 39 35 30 28 37 6 6 4 6 6
6 5 5 5 6 6 6 5 6 6 6 4 4 4 4 7 5 4 4 3 3 5 7 7 29 28 7 7 6 8 10 9 12 7
6 6 5 6 5 6 5 5 6 6 6 6 5 5 4 5 4 6 6 4 5 4 19 4 4 5 6 22 8 10 7 9 10 12 9 7
5 5 5 5 5 4 5 4 4 5 6 6 5 6 5 5 4 5 6 6 7 8 7 23 5 32 5 6 5 7 7 9 8 8 5 6
6 5 5 4 4 5 4 4 4 4 5 5 5 5 5 4 4 6 5 6 7 7 7 6 6 7 6 7 5 6 6 6 6 6 7 5
6 5 5 5 5 6 7 6 6 7 7 7 6 6

Figure 20. SATOB 101 - 400 hPa mean daily count. NOVEMBER 2001
Global average number of observations in 24 hours = 74254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60°N
30°N
0°
30°S
60°S
0 4 8 6 1 0 0 1 1 0 0 0 0 0 0
18 55 60 71 106 103 161 228 188 106 94 121 149 78 36 15 17 14 13 8 9 12 13 13 15 13 9 2 0 0 0 0 2 0 0
231 224 150 194 266 405 638 548 746 394 276 272 213 259 296 95 17 13 19 17 31 44 29 25 32 27 15 11 7 4 3 4 9 20 25 46
270 559 575 642 641 634 1002 726 933 392 386 395 313 442 505 293 29 22 29 37 40 43 39 27 24 11 18 27 32 25 15 16 22 28 40 142
186 446 544 459 394 522 892 678 503 437 542 679 536 747 785 401 48 46 48 32 21 18 17 8 3 2 10 28 25 28 20 23 21 26 24 90
387 603 847 741 800 904 635 732 431 635 1114 446 326 546 545 180 82 73 24 26 19 10 4 5 12 28 54 88 79 67 51 38 32 25 29 85
536 569 484 457 450 341 224 386 192 354 795 688 617 502 611 77 58 26 50 93 68 43 18 26 37 90 114 193 159 124 81 54 54 51 62 53
672 566 382 257 207 138 25 18 1 136 859 829 882 607 231 40 12 2 11 67 77 51 14 16 19 63 87 151 114 105 76 60 56 51 48 50
574 676 677 682 549 354 146 142 17 20 361 543 708 675 602 227 42 17 9 53 74 61 30 12 10 40 52 72 34 28 20 29 39 26 25 69
507 677 595 538 577 671 465 288 126 43 28 88 265 382 469 412 80 48 30 28 71 82 55 29 21 17 20 17 12 5 9 19 26 28 46 278
337 389 299 243 283 352 412 265 193 126 85 131 166 183 234 260 63 46 47 35 48 68 77 51 37 26 18 16 25 19 26 28 30 29 56 253
106 88 67 46 35 77 156 100 76 73 58 85 94 118 132 67 30 31 35 35 45 47 44 31 29 32 30 22 13 16 27 26 22 18 22 55
3 8 11 14 13 11 10 10 8 11 10 10 9 6

Figure 21. SATOB 101 - 400 hPa vector mean wind. NOVEMBER 2001
All observations
Arrows are plotted where greater than 10 obs are present

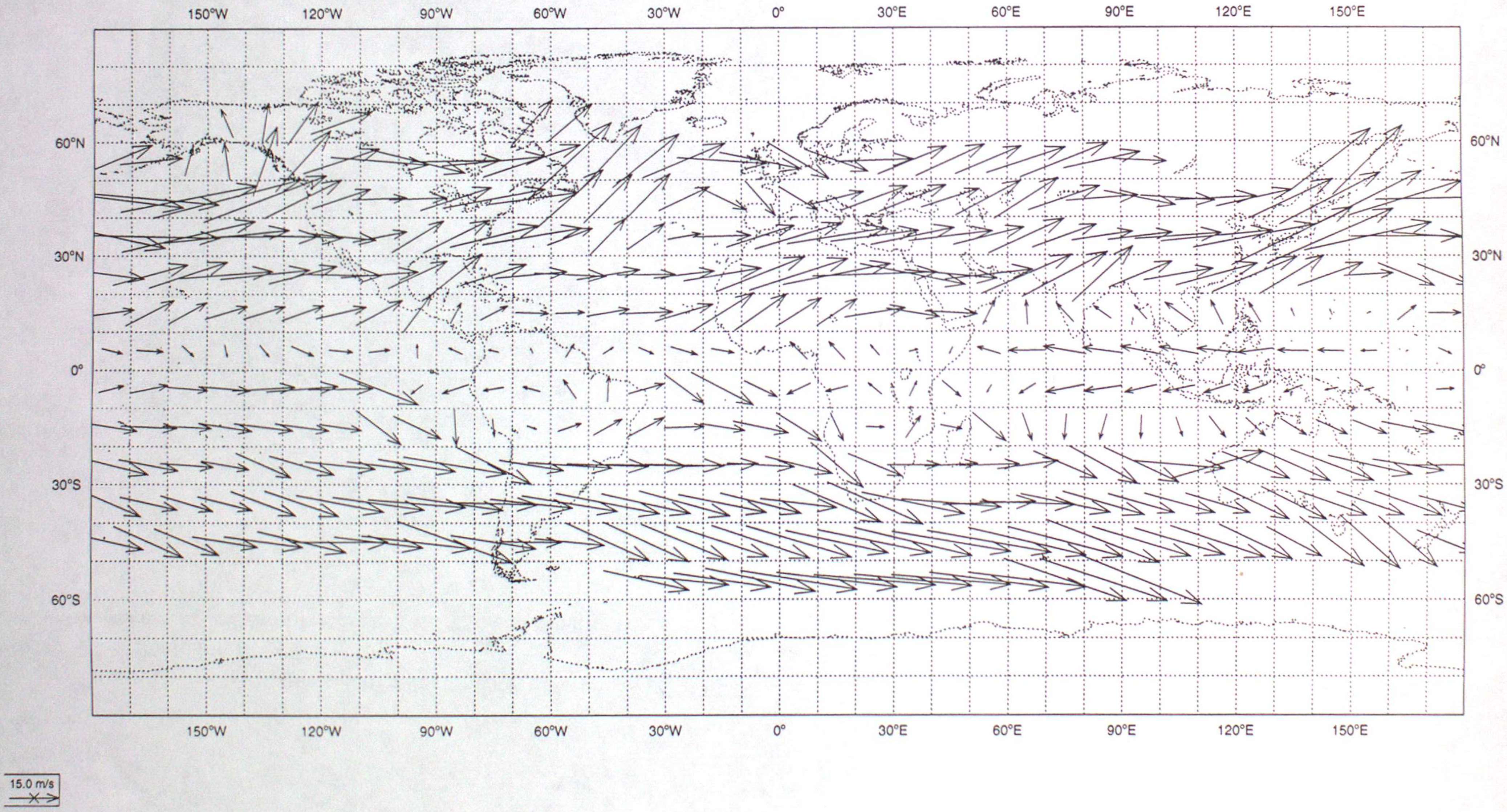

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0 m/s

Figure 22. SATOB 101 - 400 hPa vector wind differences. NOVEMBER 2001
All observations
Arrows are plotted where greater than 10 obs are present

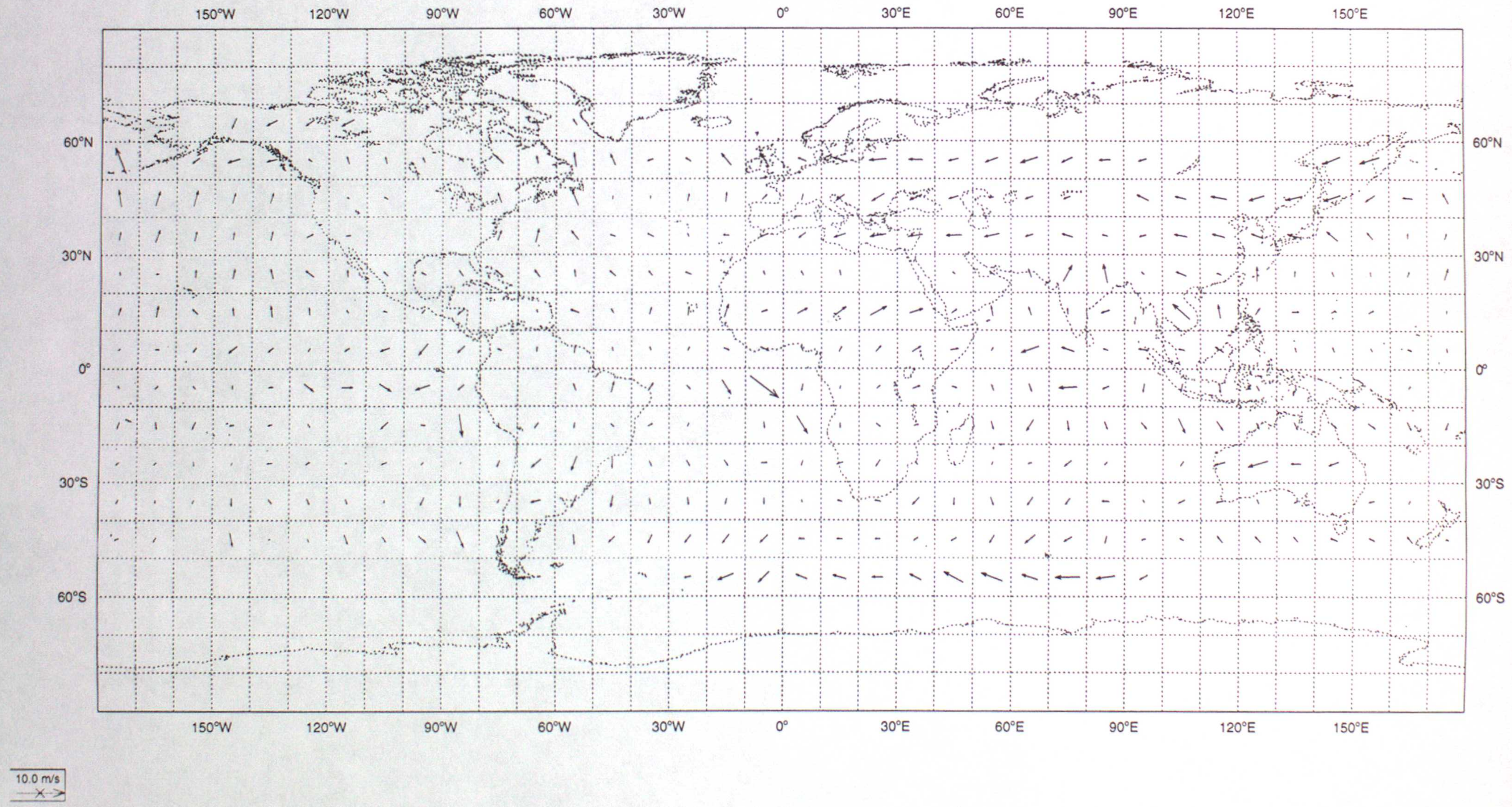

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0 m/s

Figure 23. SATOB 101 - 400 hPa mean O-B speed differences (ms-1). NOVEMBER 2001
All observations
Values are plotted where greater than 10 obs are present

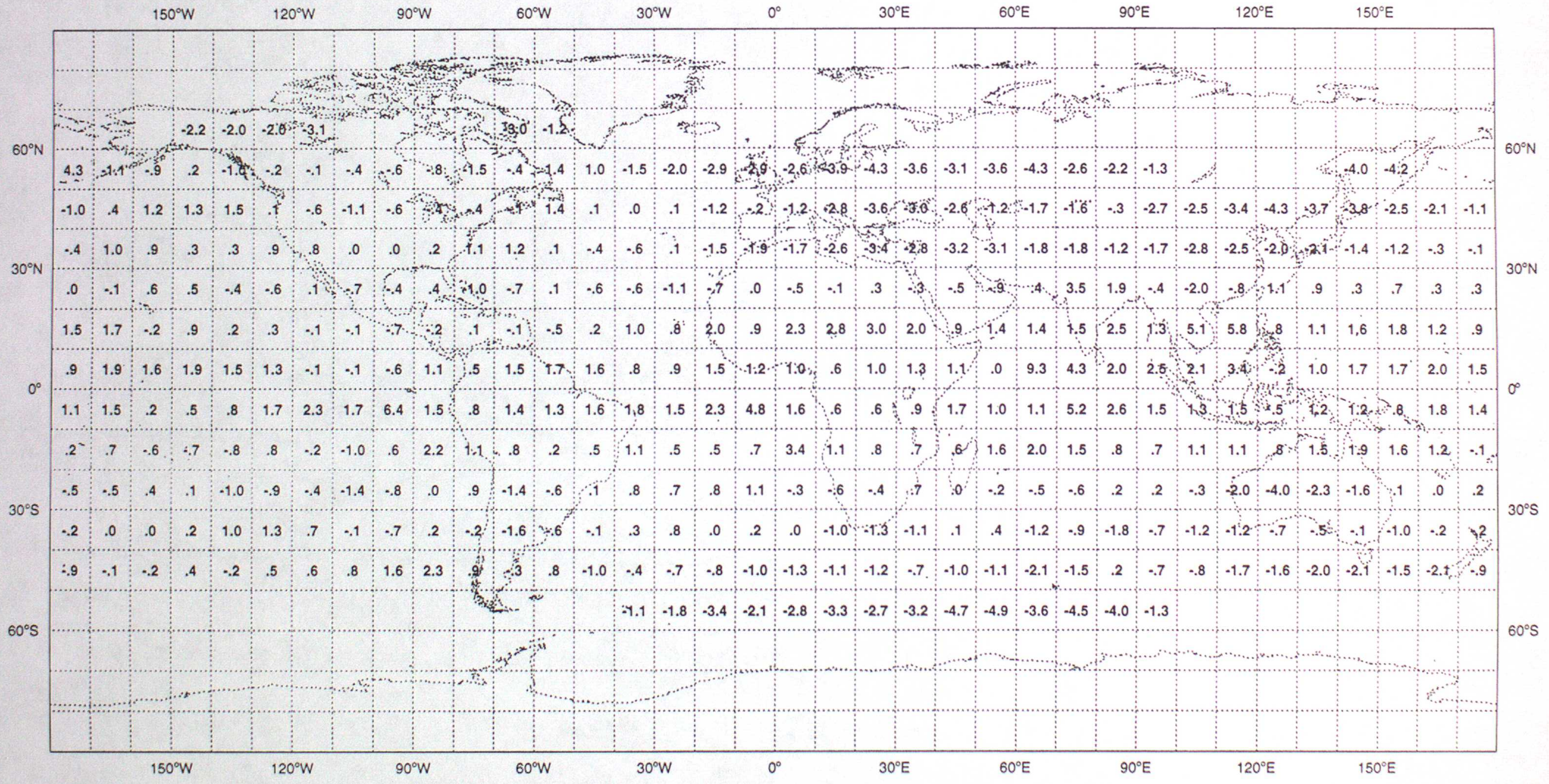
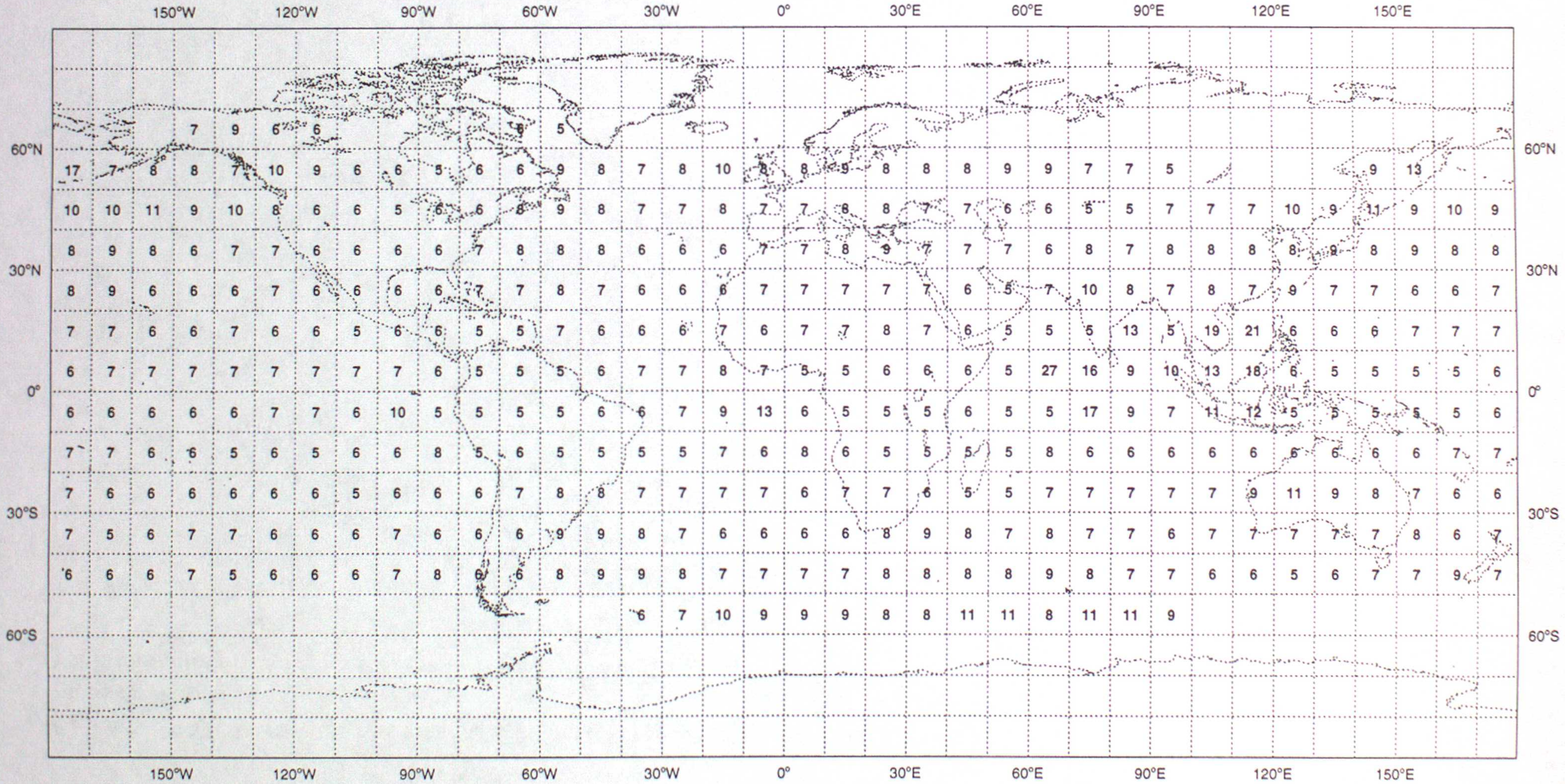

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
-2.2 -2.0 -2.0 -3.1 3.0 -1.2
4.3 -1.1 -.9 .2 -1.0 -.2 -.1 -.4 -.6 -.8 -1.5 -.4 -1.4 1.0 -1.5 -2.0 -2.9 -2.9 -2.6 -3.9 -4.3 -3.6 -3.1 -3.6 -4.3 -2.6 -2.2 -1.3 -4.0 -4.2
-1.0 .4 1.2 1.3 1.5 .1 -.6 -1.1 -.6 -.4 -.4 -.1 1.4 .1 .0 .1 -1.2 -.2 -1.2 -2.8 -3.6 -3.0 -2.6 -1.2 -1.7 -1.6 -.3 -2.7 -2.5 -3.4 -4.3 -3.7 -3.8 -2.5 -2.1 -1.1
-.4 1.0 .9 .3 .3 .9 .8 .0 .0 .2 1.1 1.2 .1 -.4 -.6 .1 -1.5 -1.9 -1.7 -2.6 -3.4 -2.8 -3.2 -3.1 -1.8 -1.8 -1.2 -1.7 -2.8 -2.5 -2.0 -2.1 -1.4 -1.2 -.3 -.1
.0 -.1 .6 .5 -.4 -.6 .1 -.7 -.4 .4 -1.0 -.7 .1 -.6 -.6 -1.1 -.7 .0 -.5 -.1 .3 -.3 -.5 -.9 .4 3.5 1.9 -.4 -2.0 -.8 1.1 .9 .3 .7 .3 .3
1.5 1.7 -.2 .9 .2 .3 -.1 -.1 -.7 -.2 .1 -.1 -.5 .2 1.0 .8 2.0 .9 2.3 2.8 3.0 2.0 .9 1.4 1.4 1.5 2.5 1.3 5.1 5.8 .8 1.1 1.6 1.8 1.2 .9
.9 1.9 1.6 1.9 1.5 1.3 -.1 -.1 -.6 1.1 .5 1.5 1.7 1.6 .8 .9 1.5 1.2 1.0 .6 1.0 1.3 1.1 .0 9.3 4.3 2.0 2.5 2.1 3.4 -.2 1.0 1.7 1.7 2.0 1.5
1.1 1.5 .2 .5 .8 1.7 2.3 1.7 6.4 1.5 .8 1.4 1.3 1.6 1.8 1.5 2.3 4.8 1.6 .6 .6 .9 1.7 1.0 1.1 5.2 2.6 1.5 1.3 1.5 .5 1.2 1.2 .8 1.8 1.4
.2 .7 -.6 -.7 -.8 .8 -.2 -1.0 .6 2.2 1.1 .8 .2 .5 1.1 .5 .5 .7 3.4 1.1 .8 .7 .6 1.6 2.0 1.5 .8 .7 1.1 1.1 .8 1.5 1.9 1.6 1.2 -.1
-.5 -.5 .4 .1 -1.0 -.9 -.4 -1.4 -.8 .0 .9 -1.4 -.6 .1 .8 .7 .8 1.1 -.3 -.6 -.4 .7 .0 -.2 -.5 -.6 .2 .2 -.3 -2.0 -4.0 -2.3 -1.6 .1 .0 .2
-.2 .0 .0 .2 1.0 1.3 .7 -.1 -.7 .2 -.2 -1.6 -.6 -.1 .3 .8 .0 .2 .0 -1.0 -1.3 -1.1 .1 .4 -1.2 -.9 -1.8 -.7 -1.2 -1.2 -.7 -.5 -.1 -1.0 -.2 .2
-.9 -.1 -.2 .4 -.2 .5 .6 .8 1.6 2.3 .9 -.3 .8 -1.0 -.4 -.7 -.8 -1.0 -1.3 -1.1 -1.2 -.7 -1.0 -1.1 -2.1 -1.5 .2 -.7 -.8 -1.7 -1.6 -2.0 -2.1 -1.5 -2.1 -.9
-1.1 -1.8 -3.4 -2.1 -2.8 -3.3 -2.7 -3.2 -4.7 -4.9 -3.6 -4.5 -4.0 -1.3

Figure 24. SATOB 101 - 400 hPa RMS O-B vector differences (ms-1). NOVEMBER 2001

All observations

Values are plotted where greater than 10 obs are present


150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

MONITORING OF SATELLITE TEMPERATURES

MONITORING CENTRE: BRACKNELL

MONTH: November 2001

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from NOAA-15 and NOAA-16.

Standard of comparison :Background field from UKMO global model.

Selection Criteria :All soundings.

Data Extracted :Sounding channels (and approximate weighting function peaks, hPa)

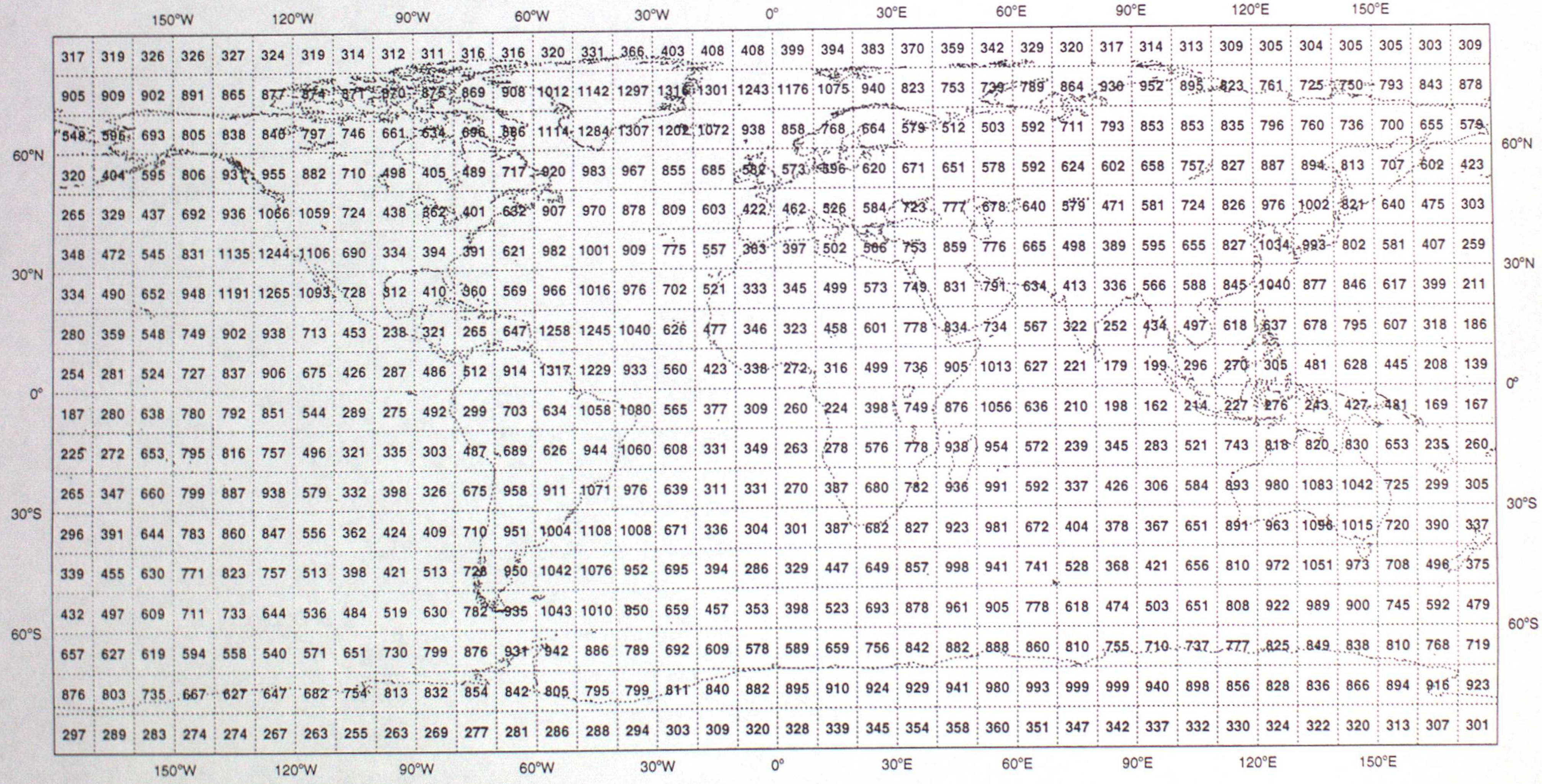
HIRS8 (Surface)
HIRS15 (700)
HIRS11 (500-700)
HIRS4 (400)
AMSUA5 (700)
AMSUA7 (300)
AMSUA9 (100)

:Mean and standard deviation observation-minus-background brightness temperature differences

Figure 25. ATOVS mean daily count. NOVEMBER 2001

NOAA15, using all observations

Global average number of observations in 24 hours = 412222

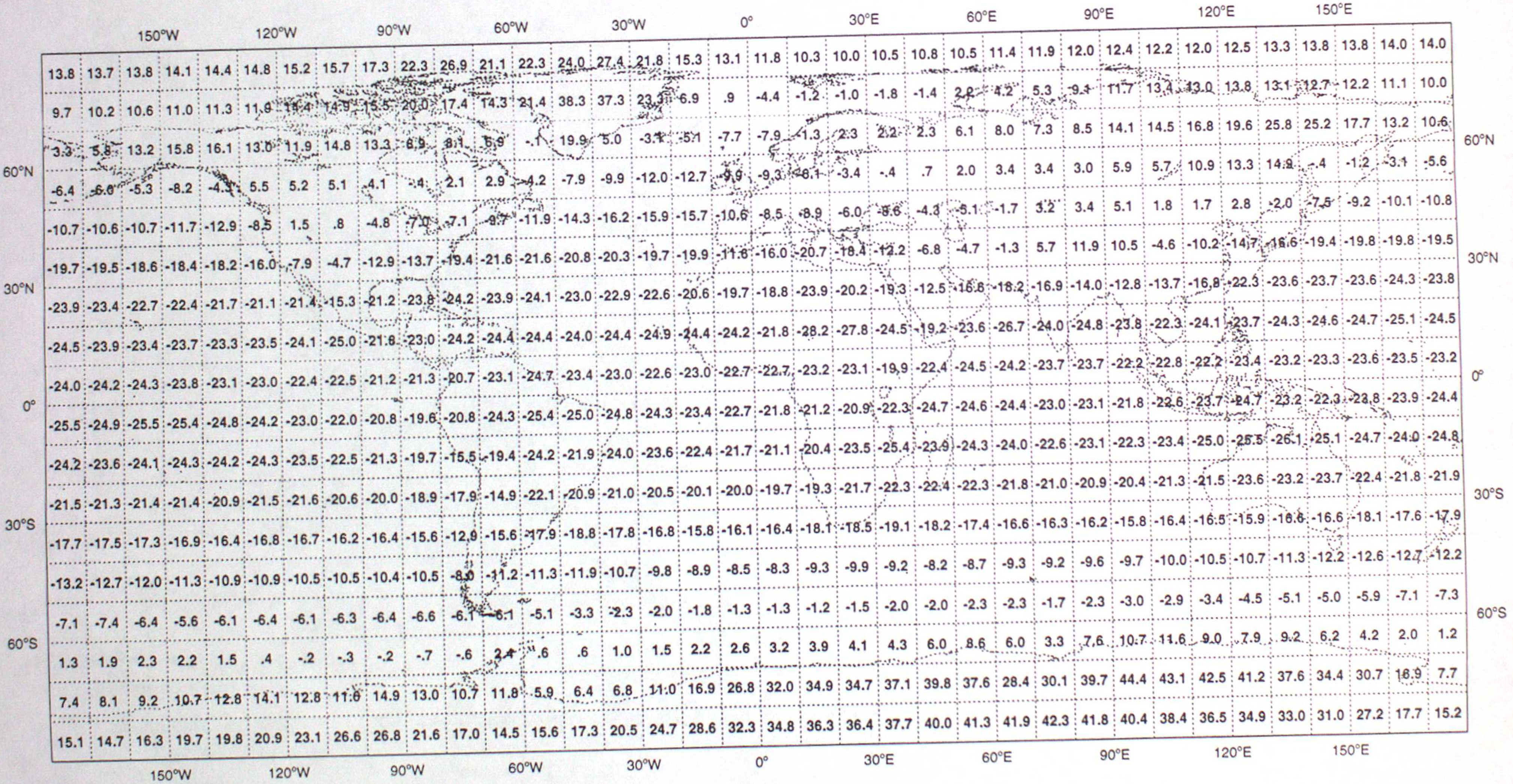


317	319	326	326	327	324	319	314	312	311	316	316	320	331	366	403	408	408	399	394	383	370	359	342	329	320	317	314	313	309	305	304	305	305	303	309
905	909	902	891	865	877	874	871	870	875	869	908	1012	1142	1297	1316	1301	1243	1176	1075	940	823	753	739	789	864	930	952	895	823	761	725	750	793	843	878
548	596	693	805	838	840	797	746	661	634	696	886	1114	1284	1307	1202	1072	938	858	768	664	579	512	503	592	711	793	853	853	835	796	760	736	700	655	579
320	404	595	806	931	955	882	710	498	405	489	717	920	983	967	855	685	582	573	596	620	671	651	578	592	624	602	658	757	827	887	894	813	707	602	423
265	329	437	692	936	1066	1059	724	438	362	401	632	907	970	878	809	603	422	462	526	584	723	777	678	640	579	471	581	724	826	976	1002	821	640	475	303
348	472	545	831	1135	1244	1106	690	334	394	391	621	982	1001	909	775	557	363	397	502	566	753	859	776	665	498	389	595	655	827	1034	993	802	581	407	259
334	490	652	948	1191	1265	1093	728	312	410	360	569	966	1016	976	702	521	333	345	499	573	749	831	791	634	413	336	566	588	845	1040	877	846	617	399	211
280	359	548	749	902	938	713	453	238	321	265	647	1258	1245	1040	626	477	346	323	458	601	778	834	734	567	322	252	434	497	618	637	678	795	607	318	186
254	281	524	727	837	906	675	426	287	486	512	914	1317	1229	933	560	423	338	272	316	499	736	905	1013	627	221	179	199	296	270	305	481	628	445	208	139
187	280	638	780	792	851	544	289	275	492	299	703	634	1058	1080	565	377	309	260	224	398	749	876	1056	636	210	198	162	214	227	276	243	427	481	169	167
225	272	653	795	816	757	496	321	335	303	487	689	626	944	1060	608	331	349	263	278	576	778	938	954	572	239	345	283	521	743	818	820	830	653	235	260
265	347	660	799	887	938	579	332	398	326	675	958	911	1071	976	639	311	331	270	387	680	782	936	991	592	337	426	306	584	893	980	1083	1042	725	299	305
296	391	644	783	860	847	556	362	424	409	710	951	1004	1108	1008	671	336	304	301	387	682	827	923	981	672	404	378	367	651	891	963	1096	1015	720	390	337
339	455	630	771	823	757	513	398	421	513	728	950	1042	1076	952	695	394	286	329	447	649	857	998	941	741	528	368	421	656	810	972	1051	973	708	496	375
432	497	609	711	733	644	536	484	519	630	782	935	1043	1010	850	659	457	353	398	523	693	878	961	905	778	618	474	503	651	808	922	989	900	745	592	479
657	627	619	594	558	540	571	651	730	799	876	931	942	886	789	692	609	578	589	659	756	842	882	888	860	810	755	710	737	777	825	849	838	810	768	719
876	803	735	667	627	647	682	754	813	832	854	842	805	795	799	811	840	882	895	910	924	929	941	980	993	999	999	940	898	856	828	836	866	894	916	923
297	289	283	274	274	267	263	255	263	269	277	281	286	288	294	303	309	320	328	339	345	354	358	360	351	347	342	337	332	330	324	322	320	313	307	301

Figure 26. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2001

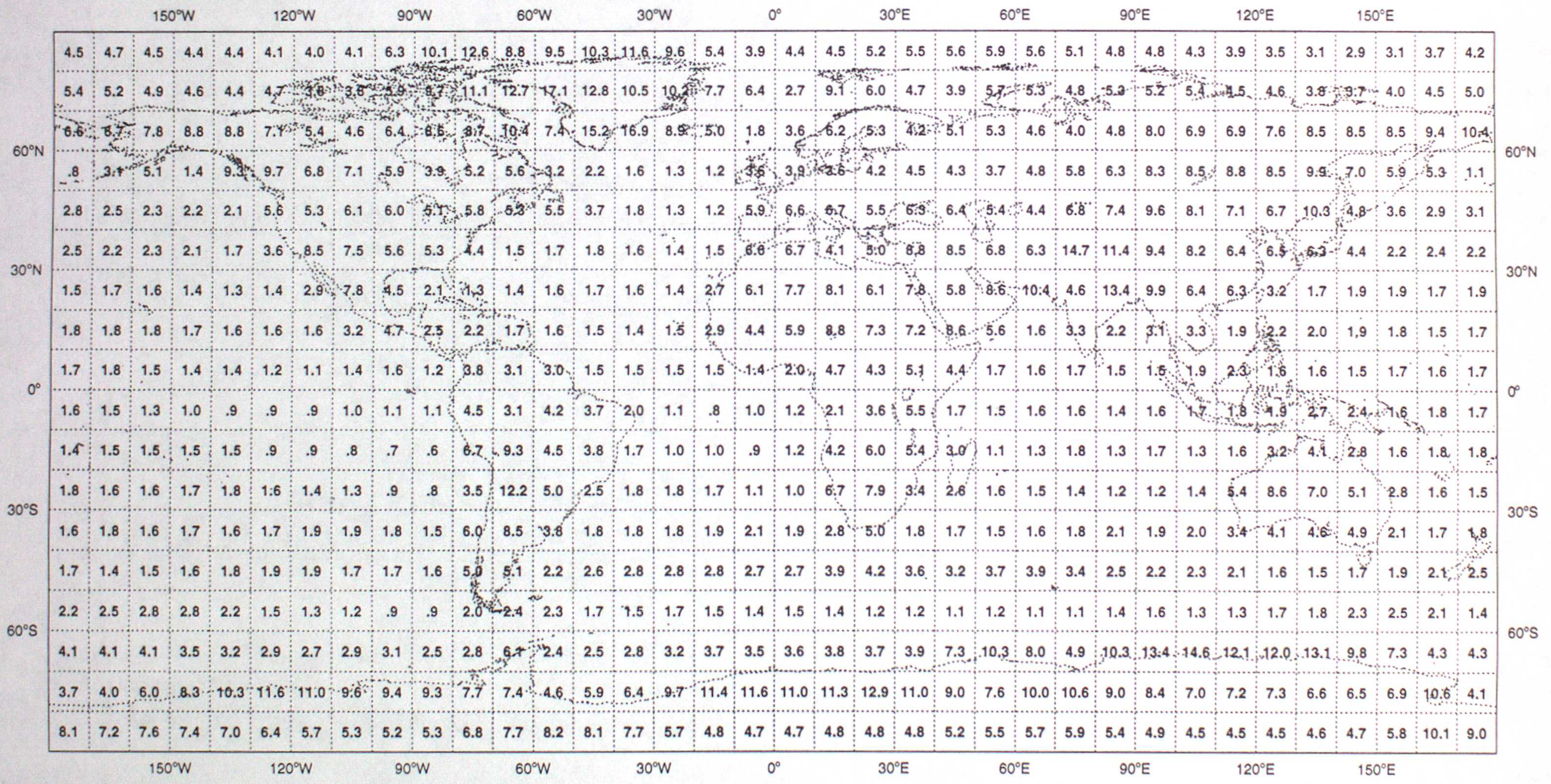
Channel: HIRS8 (Surface)

NOAA15, using all observations



13.8	13.7	13.8	14.1	14.4	14.8	15.2	15.7	17.3	22.3	26.9	21.1	22.3	24.0	27.4	21.8	15.3	13.1	11.8	10.3	10.0	10.5	10.8	10.5	11.4	11.9	12.0	12.4	12.2	12.0	12.5	13.3	13.8	13.8	14.0	14.0
9.7	10.2	10.6	11.0	11.3	11.8	14.4	14.9	15.5	20.0	17.4	14.3	21.4	38.3	37.3	23.3	6.9	.9	-4.4	-1.2	-1.0	-1.8	-1.4	2.2	4.2	5.3	9.1	11.7	13.4	13.0	13.8	13.1	12.7	12.2	11.1	10.0
3.3	5.8	13.2	15.8	16.1	13.0	11.9	14.8	13.3	8.9	8.1	5.9	-.1	19.9	5.0	-3.1	5.1	-7.7	-7.9	-1.3	2.3	2.2	2.3	6.1	8.0	7.3	8.5	14.1	14.5	16.8	19.6	25.8	25.2	17.7	13.2	10.6
-6.4	-6.0	-5.3	-8.2	-4.3	5.5	5.2	5.1	-4.1	-.4	2.1	2.9	-4.2	-7.9	-9.9	-12.0	-12.7	-9.9	-9.3	-8.1	-3.4	-.4	.7	2.0	3.4	3.4	3.0	5.9	5.7	10.9	13.3	14.9	-.4	-1.2	-3.1	-5.6
-10.7	-10.6	-10.7	-11.7	-12.9	-8.5	1.5	.8	-4.8	-7.0	-7.1	-9.7	-11.9	-14.3	-16.2	-15.9	-15.7	-10.6	-8.5	-8.9	-6.0	-8.6	-4.3	-5.1	-1.7	3.2	3.4	5.1	1.8	1.7	2.8	-2.0	-7.5	-9.2	-10.1	-10.8
-19.7	-19.5	-18.6	-18.4	-18.2	-16.0	-7.9	-4.7	-12.9	-13.7	-19.4	-21.6	-21.6	-20.8	-20.3	-19.7	-19.9	-11.6	-16.0	-20.7	-18.4	-12.2	-6.8	-4.7	-1.3	5.7	11.9	10.5	-4.6	-10.2	-14.7	-16.6	-19.4	-19.8	-19.8	-19.5
-23.9	-23.4	-22.7	-22.4	-21.7	-21.1	-21.4	-15.3	-21.2	-23.8	-24.2	-23.9	-24.1	-23.0	-22.9	-22.6	-20.6	-19.7	-18.8	-23.9	-20.2	-19.3	-12.5	-16.6	-18.2	-16.9	-14.0	-12.8	-13.7	-16.8	-22.3	-23.6	-23.7	-23.6	-24.3	-23.8
-24.5	-23.9	-23.4	-23.7	-23.3	-23.5	-24.1	-25.0	-21.8	-23.0	-24.2	-24.4	-24.4	-24.0	-24.4	-24.9	-24.4	-24.2	-21.8	-28.2	-27.8	-24.5	-19.2	-23.6	-26.7	-24.0	-24.8	-23.8	-22.3	-24.1	-23.7	-24.3	-24.6	-24.7	-25.1	-24.5
-24.0	-24.2	-24.3	-23.8	-23.1	-23.0	-22.4	-22.5	-21.2	-21.3	-20.7	-23.1	-24.7	-23.4	-23.0	-22.6	-23.0	-22.7	-22.7	-23.2	-23.1	-19.9	-22.4	-24.5	-24.2	-23.7	-23.7	-22.2	-22.8	-22.2	-23.4	-23.2	-23.3	-23.6	-23.5	-23.2
-25.5	-24.9	-25.5	-25.4	-24.8	-24.2	-23.0	-22.0	-20.8	-19.6	-20.8	-24.3	-25.4	-25.0	-24.8	-24.3	-23.4	-22.7	-21.8	-21.2	-20.9	-22.3	-24.7	-24.6	-24.4	-23.0	-23.1	-21.8	-22.6	-23.7	-24.7	-23.2	-22.3	-23.8	-23.9	-24.4
-24.2	-23.6	-24.1	-24.3	-24.2	-24.3	-23.5	-22.5	-21.3	-19.7	-15.5	-19.4	-24.2	-21.9	-24.0	-23.6	-22.4	-21.7	-21.1	-20.4	-23.5	-25.4	-23.9	-24.3	-24.0	-22.6	-23.1	-22.3	-23.4	-25.0	-25.5	-26.1	-25.1	-24.7	-24.0	-24.8
-21.5	-21.3	-21.4	-21.4	-20.9	-21.5	-21.6	-20.6	-20.0	-18.9	-17.9	-14.9	-22.1	-20.9	-21.0	-20.5	-20.1	-20.0	-19.7	-19.3	-21.7	-22.3	-22.4	-22.3	-21.8	-21.0	-20.9	-20.4	-21.3	-21.5	-23.6	-23.2	-23.7	-22.4	-21.8	-21.9
-17.7	-17.5	-17.3	-16.9	-16.4	-16.8	-16.7	-16.2	-16.4	-15.6	-12.9	-15.6	-17.9	-18.8	-17.8	-16.8	-15.8	-16.1	-16.4	-18.1	-18.5	-19.1	-18.2	-17.4	-16.6	-16.3	-16.2	-15.8	-16.4	-16.5	-15.9	-16.6	-16.6	-18.1	-17.6	-17.9
-13.2	-12.7	-12.0	-11.3	-10.9	-10.9	-10.5	-10.5	-10.4	-10.5	-8.0	-11.2	-11.3	-11.9	-10.7	-9.8	-8.9	-8.5	-8.3	-9.3	-9.9	-9.2	-8.2	-8.7	-9.3	-9.2	-9.6	-9.7	-10.0	-10.5	-10.7	-11.3	-12.2	-12.6	-12.7	-12.2
-7.1	-7.4	-6.4	-5.6	-6.1	-6.4	-6.1	-6.3	-6.4	-6.6	-6.1	-6.1	-5.1	-3.3	-2.3	-2.0	-1.8	-1.3	-1.3	-1.2	-1.5	-2.0	-2.0	-2.3	-2.3	-1.7	-2.3	-3.0	-2.9	-3.4	-4.5	-5.1	-5.0	-5.9	-7.1	-7.3
1.3	1.9	2.3	2.2	1.5	.4	-.2	-.3	-.2	-.7	-.6	2.4	.6	.6	1.0	1.5	2.2	2.6	3.2	3.9	4.1	4.3	6.0	8.6	6.0	3.3	7.6	10.7	11.6	9.0	7.9	9.2	6.2	4.2	2.0	1.2
7.4	8.1	9.2	10.7	12.8	14.1	12.8	11.6	14.9	13.0	10.7	11.8	5.9	6.4	6.8	11.0	16.9	26.8	32.0	34.9	34.7	37.1	39.8	37.6	28.4	30.1	39.7	44.4	43.1	42.5	41.2	37.6	34.4	30.7	16.9	7.7
15.1	14.7	16.3	19.7	19.8	20.9	23.1	26.6	26.8	21.6	17.0	14.5	15.6	17.3	20.5	24.7	28.6	32.3	34.8	36.3	36.4	37.7	40.0	41.3	41.9	42.3	41.8	40.4	38.4	36.5	34.9	33.0	31.0	27.2	17.7	15.2

Figure 27. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2001
Channel: HIRS8 (Surface)
NOAA15, using all observations

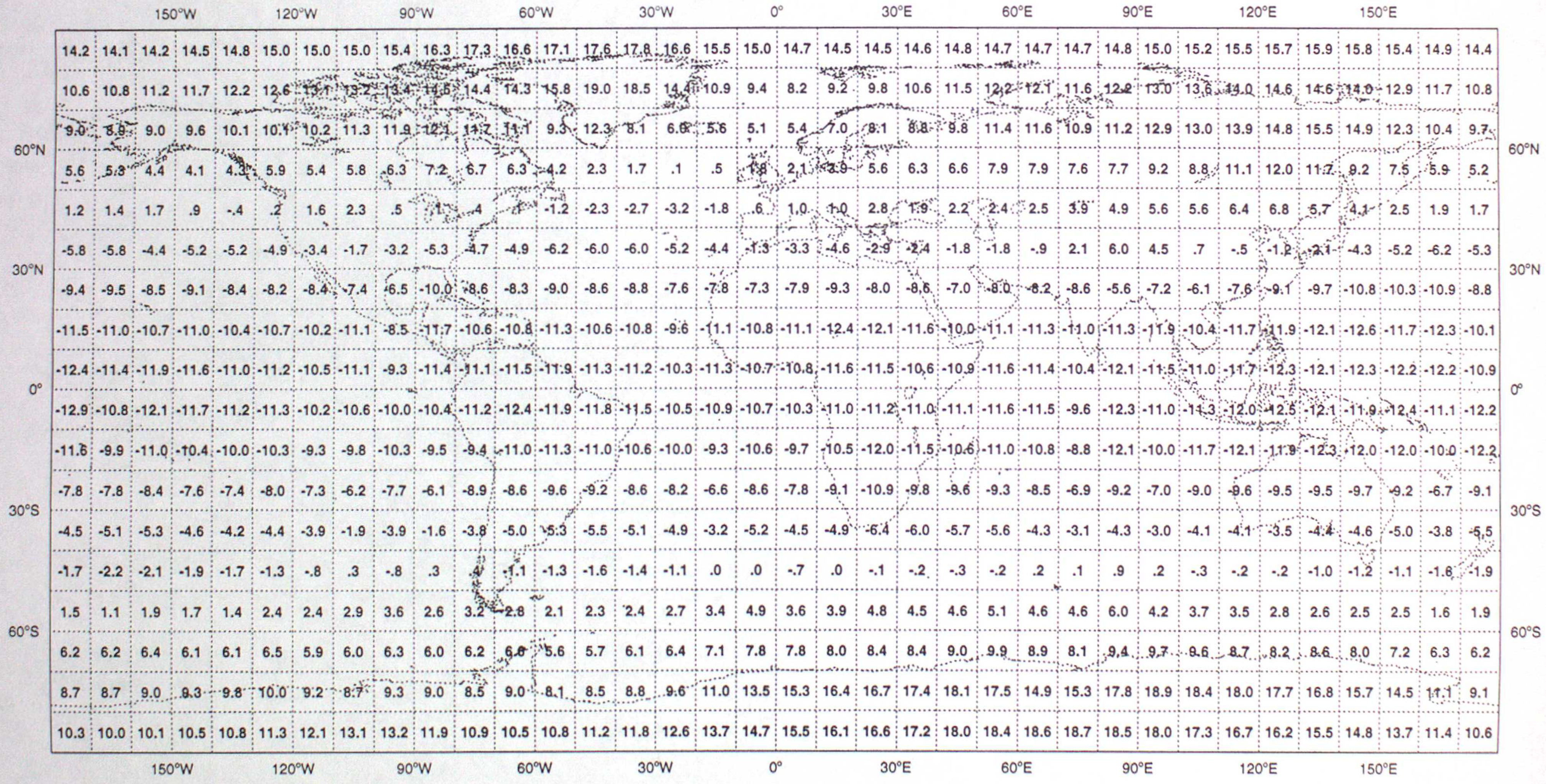


4.5	4.7	4.5	4.4	4.4	4.1	4.0	4.1	6.3	10.1	12.6	8.8	9.5	10.3	11.6	9.6	5.4	3.9	4.4	4.5	5.2	5.5	5.6	5.9	5.6	5.1	4.8	4.8	4.3	3.9	3.5	3.1	2.9	3.1	3.7	4.2
5.4	5.2	4.9	4.6	4.4	4.7	3.8	3.8	5.9	8.7	11.1	12.7	17.1	12.8	10.5	10.2	7.7	6.4	2.7	9.1	6.0	4.7	3.9	5.7	5.3	4.8	5.3	5.2	5.4	4.5	4.6	3.8	3.7	4.0	4.5	5.0
6.6	6.7	7.8	8.8	8.8	7.1	5.4	4.6	6.4	6.5	8.7	10.4	7.4	15.2	16.9	8.9	5.0	1.8	3.6	6.2	5.3	4.2	5.1	5.3	4.6	4.0	4.8	8.0	6.9	6.9	7.6	8.5	8.5	8.5	9.4	10.4
.8	3.1	5.1	1.4	9.3	9.7	6.8	7.1	5.9	3.9	5.2	5.6	3.2	2.2	1.6	1.3	1.2	3.6	3.9	3.6	4.2	4.5	4.3	3.7	4.8	5.8	6.3	8.3	8.5	8.8	8.5	9.9	7.0	5.9	5.3	1.1
2.8	2.5	2.3	2.2	2.1	5.6	5.3	6.1	6.0	5.1	5.8	5.3	5.5	3.7	1.8	1.3	1.2	5.9	6.6	6.7	5.5	6.3	6.4	5.4	4.4	6.8	7.4	9.6	8.1	7.1	6.7	10.3	4.8	3.6	2.9	3.1
2.5	2.2	2.3	2.1	1.7	3.6	8.5	7.5	5.6	5.3	4.4	1.5	1.7	1.8	1.6	1.4	1.5	6.6	6.7	4.1	5.0	8.8	8.5	6.8	6.3	14.7	11.4	9.4	8.2	6.4	6.5	6.3	4.4	2.2	2.4	2.2
1.5	1.7	1.6	1.4	1.3	1.4	2.9	7.8	4.5	2.1	1.3	1.4	1.6	1.7	1.6	1.4	2.7	6.1	7.7	8.1	6.1	7.8	5.8	8.6	10.4	4.6	13.4	9.9	6.4	6.3	3.2	1.7	1.9	1.9	1.7	1.9
1.8	1.8	1.8	1.7	1.6	1.6	1.6	3.2	4.7	2.5	2.2	1.7	1.6	1.5	1.4	1.5	2.9	4.4	5.9	8.8	7.3	7.2	8.6	5.6	1.6	3.3	2.2	3.1	3.3	1.9	2.2	2.0	1.9	1.8	1.5	1.7
1.7	1.8	1.5	1.4	1.4	1.2	1.1	1.4	1.6	1.2	3.8	3.1	3.0	1.5	1.5	1.5	1.5	1.4	2.0	4.7	4.3	5.1	4.4	1.7	1.6	1.7	1.5	1.5	1.9	2.3	1.6	1.6	1.5	1.7	1.6	1.7
1.6	1.5	1.3	1.0	.9	.9	.9	1.0	1.1	1.1	4.5	3.1	4.2	3.7	2.0	1.1	.8	1.0	1.2	2.1	3.6	5.5	1.7	1.5	1.6	1.6	1.4	1.6	1.7	1.8	1.9	2.7	2.4	1.6	1.8	1.7
1.4	1.5	1.5	1.5	1.5	.9	.9	.8	.7	.6	6.7	9.3	4.5	3.8	1.7	1.0	1.0	.9	1.2	4.2	6.0	5.4	3.0	1.1	1.3	1.8	1.3	1.7	1.3	1.6	3.2	4.1	2.8	1.6	1.8	1.8
1.8	1.6	1.6	1.7	1.8	1.6	1.4	1.3	.9	.8	3.5	12.2	5.0	2.5	1.8	1.8	1.7	1.1	1.0	6.7	7.9	3.4	2.6	1.6	1.5	1.4	1.2	1.2	1.4	5.4	8.6	7.0	5.1	2.8	1.6	1.5
1.6	1.8	1.6	1.7	1.6	1.7	1.9	1.9	1.8	1.5	6.0	8.5	3.8	1.8	1.8	1.8	1.9	2.1	1.9	2.8	5.0	1.8	1.7	1.5	1.6	1.8	2.1	1.9	2.0	3.4	4.1	4.6	4.9	2.1	1.7	1.8
1.7	1.4	1.5	1.6	1.8	1.9	1.9	1.7	1.7	1.6	5.0	5.1	2.2	2.6	2.8	2.8	2.8	2.7	2.7	3.9	4.2	3.6	3.2	3.7	3.9	3.4	2.5	2.2	2.3	2.1	1.6	1.5	1.7	1.9	2.1	2.5
2.2	2.5	2.8	2.8	2.2	1.5	1.3	1.2	.9	.9	2.0	2.4	2.3	1.7	1.5	1.7	1.5	1.4	1.5	1.4	1.2	1.2	1.1	1.2	1.1	1.1	1.4	1.6	1.3	1.3	1.7	1.8	2.3	2.5	2.1	1.4
4.1	4.1	4.1	3.5	3.2	2.9	2.7	2.9	3.1	2.5	2.8	6.1	2.4	2.5	2.8	3.2	3.7	3.5	3.6	3.8	3.7	3.9	7.3	10.3	8.0	4.9	10.3	13.4	14.6	12.1	12.0	13.1	9.8	7.3	4.3	4.3
3.7	4.0	6.0	8.3	10.3	11.6	11.0	9.6	9.4	9.3	7.7	7.4	4.6	5.9	6.4	9.7	11.4	11.6	11.0	11.3	12.9	11.0	9.0	7.6	10.0	10.6	9.0	8.4	7.0	7.2	7.3	6.6	6.5	6.9	10.6	4.1
8.1	7.2	7.6	7.4	7.0	6.4	5.7	5.3	5.2	5.3	6.8	7.7	8.2	8.1	7.7	5.7	4.8	4.7	4.7	4.8	4.8	4.8	5.2	5.5	5.7	5.9	5.4	4.9	4.5	4.5	4.5	4.6	4.7	5.8	10.1	9.0

Figure 28. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2001

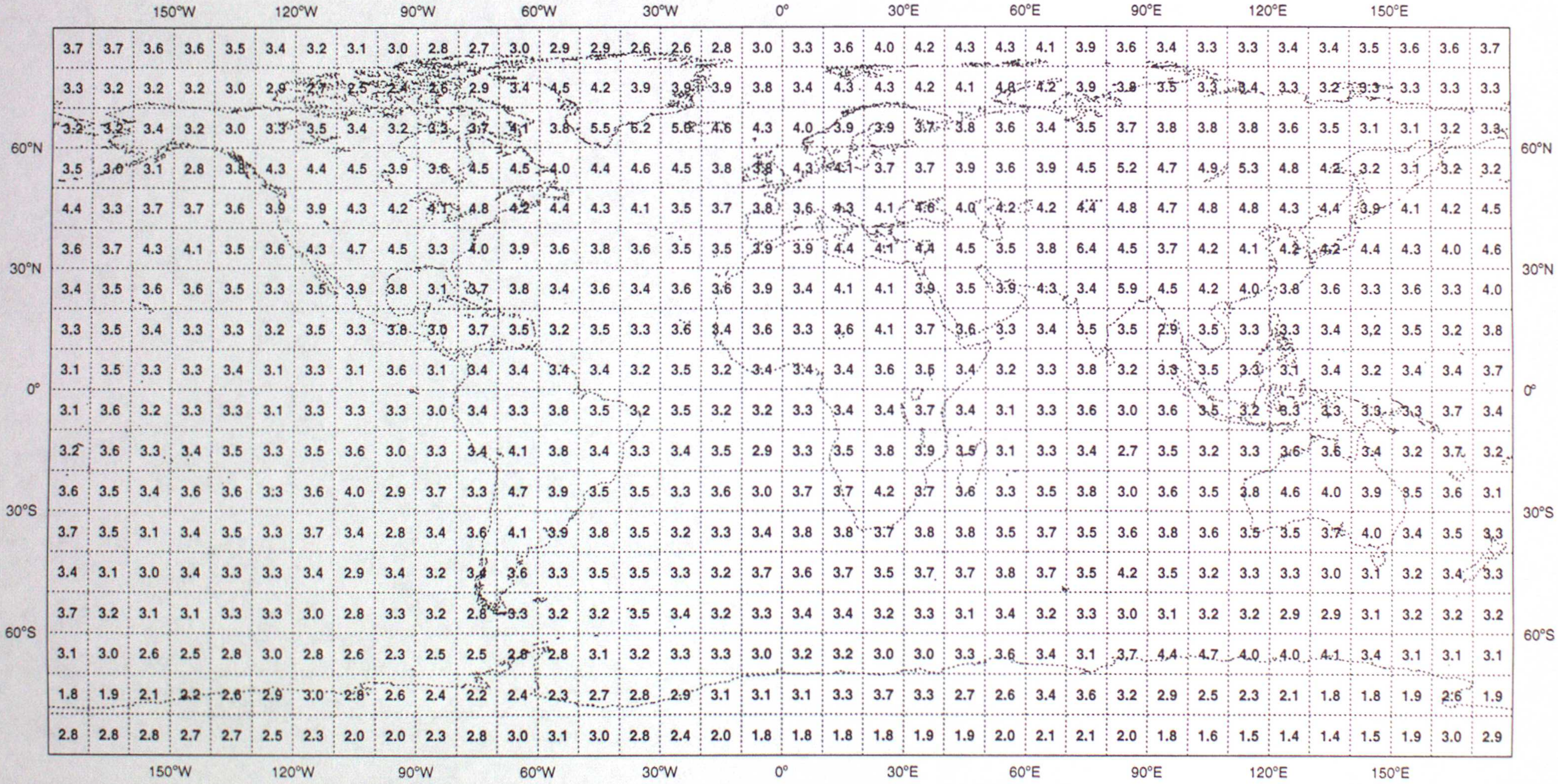
Channel: HIRS15 (700 hPa)

NOAA15, using all observations



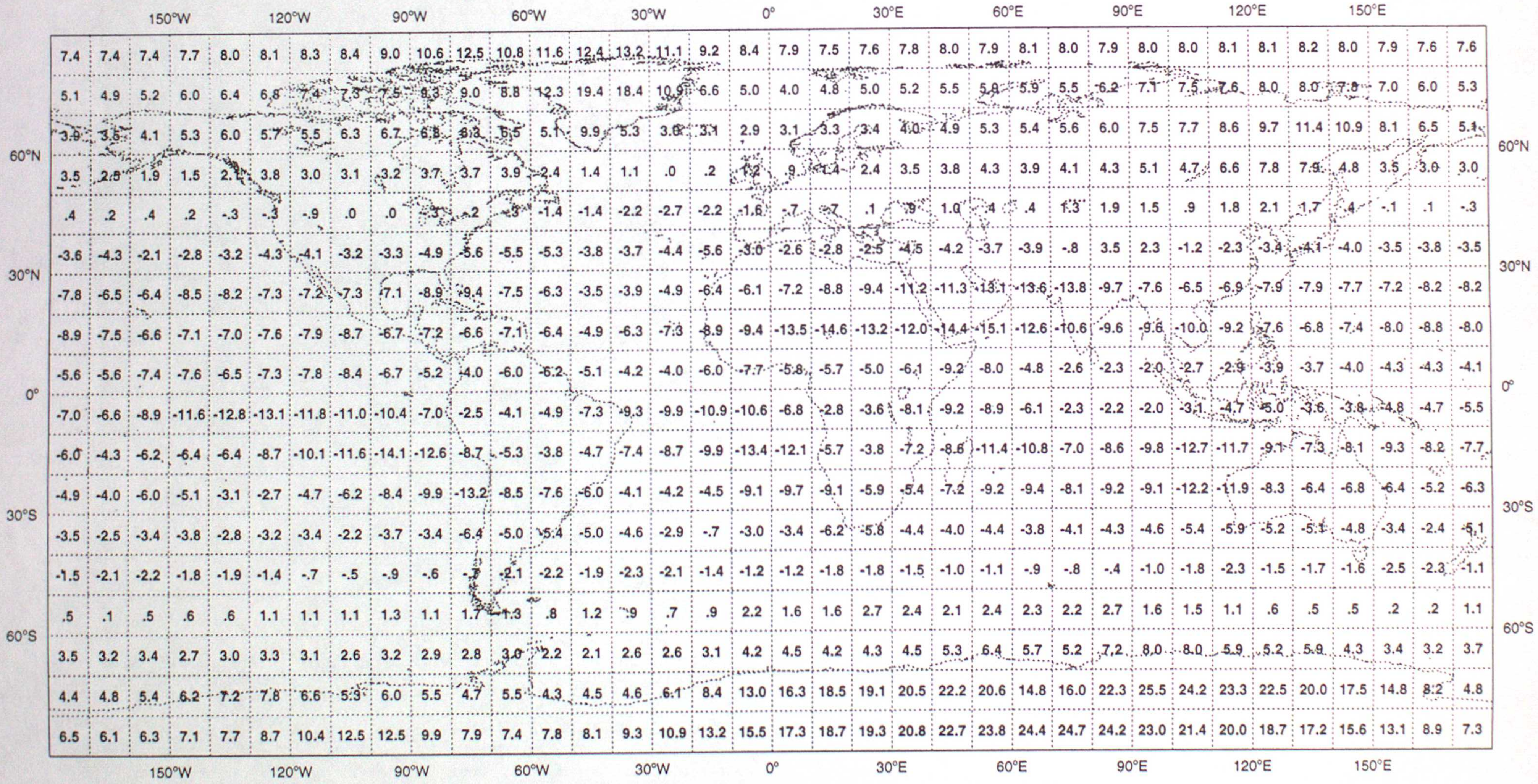
14.2	14.1	14.2	14.5	14.8	15.0	15.0	15.0	15.4	16.3	17.3	16.6	17.1	17.6	17.8	16.6	15.5	15.0	14.7	14.5	14.5	14.6	14.8	14.7	14.7	14.7	14.8	15.0	15.2	15.5	15.7	15.9	15.8	15.4	14.9	14.4
10.6	10.8	11.2	11.7	12.2	12.6	13.1	13.2	13.4	14.5	14.4	14.3	15.8	19.0	18.5	14.4	10.9	9.4	8.2	9.2	9.8	10.6	11.5	12.2	12.1	11.6	12.2	13.0	13.6	14.0	14.6	14.6	14.0	12.9	11.7	10.8
9.0	8.9	9.0	9.6	10.1	10.1	10.2	11.3	11.9	12.1	11.7	11.1	9.3	12.3	8.1	6.6	5.6	5.1	5.4	7.0	8.1	8.8	9.8	11.4	11.6	10.9	11.2	12.9	13.0	13.9	14.8	15.5	14.9	12.3	10.4	9.7
5.6	5.3	4.4	4.1	4.3	5.9	5.4	5.8	6.3	7.2	6.7	6.3	4.2	2.3	1.7	.1	.5	1.8	2.1	3.9	5.6	6.3	6.6	7.9	7.9	7.6	7.7	9.2	8.8	11.1	12.0	11.7	9.2	7.5	5.9	5.2
1.2	1.4	1.7	.9	-.4	.2	1.6	2.3	.5	.1	.4	.1	-1.2	-2.3	-2.7	-3.2	-1.8	.6	1.0	1.0	2.8	1.9	2.2	2.4	2.5	3.9	4.9	5.6	5.6	6.4	6.8	5.7	4.1	2.5	1.9	1.7
-5.8	-5.8	-4.4	-5.2	-5.2	-4.9	-3.4	-1.7	-3.2	-5.3	-4.7	-4.9	-6.2	-6.0	-6.0	-5.2	-4.4	-1.3	-3.3	-4.6	-2.9	-2.4	-1.8	-1.8	-.9	2.1	6.0	4.5	.7	-.5	-1.2	-2.1	-4.3	-5.2	-6.2	-5.3
-9.4	-9.5	-8.5	-9.1	-8.4	-8.2	-8.4	-7.4	-6.5	-10.0	-8.6	-8.3	-9.0	-8.6	-8.8	-7.6	-7.8	-7.3	-7.9	-9.3	-8.0	-8.6	-7.0	-8.0	-8.2	-8.6	-5.6	-7.2	-6.1	-7.6	-9.1	-9.7	-10.8	-10.3	-10.9	-8.8
-11.5	-11.0	-10.7	-11.0	-10.4	-10.7	-10.2	-11.1	-8.5	-11.7	-10.6	-10.8	-11.3	-10.6	-10.8	-9.6	-11.1	-10.8	-11.1	-12.4	-12.1	-11.6	-10.0	-11.1	-11.3	-11.0	-11.3	-11.9	-10.4	-11.7	-11.9	-12.1	-12.6	-11.7	-12.3	-10.1
-12.4	-11.4	-11.9	-11.6	-11.0	-11.2	-10.5	-11.1	-9.3	-11.4	-11.1	-11.5	-11.9	-11.3	-11.2	-10.3	-11.3	-10.7	-10.8	-11.6	-11.5	-10.6	-10.9	-11.6	-11.4	-10.4	-12.1	-11.5	-11.0	-11.7	-12.3	-12.1	-12.3	-12.2	-12.2	-10.9
-12.9	-10.8	-12.1	-11.7	-11.2	-11.3	-10.2	-10.6	-10.0	-10.4	-11.2	-12.4	-11.9	-11.8	-11.5	-10.5	-10.9	-10.7	-10.3	-11.0	-11.2	-11.0	-11.1	-11.6	-11.5	-9.6	-12.3	-11.0	-11.3	-12.0	-12.5	-12.1	-11.9	-12.4	-11.1	-12.2
-11.6	-9.9	-11.0	-10.4	-10.0	-10.3	-9.3	-9.8	-10.3	-9.5	-9.4	-11.0	-11.3	-11.0	-10.6	-10.0	-9.3	-10.6	-9.7	-10.5	-12.0	-11.5	-10.6	-11.0	-10.8	-8.8	-12.1	-10.0	-11.7	-12.1	-11.9	-12.3	-12.0	-12.0	-10.0	-12.2
-7.8	-7.8	-8.4	-7.6	-7.4	-8.0	-7.3	-6.2	-7.7	-6.1	-8.9	-8.6	-9.6	-9.2	-8.6	-8.2	-6.6	-8.6	-7.8	-9.1	-10.9	-9.8	-9.6	-9.3	-8.5	-6.9	-9.2	-7.0	-9.0	-9.6	-9.5	-9.5	-9.7	-9.2	-6.7	-9.1
-4.5	-5.1	-5.3	-4.6	-4.2	-4.4	-3.9	-1.9	-3.9	-1.6	-3.8	-5.0	-5.3	-5.5	-5.1	-4.9	-3.2	-5.2	-4.5	-4.9	-6.4	-6.0	-5.7	-5.6	-4.3	-3.1	-4.3	-3.0	-4.1	-4.1	-3.5	-4.4	-4.6	-5.0	-3.8	-5.5
-1.7	-2.2	-2.1	-1.9	-1.7	-1.3	-.8	.3	-.8	.3	.4	-1.1	-1.3	-1.6	-1.4	-1.1	.0	.0	-.7	.0	-.1	-.2	-.3	-.2	.2	.1	.9	.2	-.3	-.2	-.2	-1.0	-1.2	-1.1	-1.6	-1.9
1.5	1.1	1.9	1.7	1.4	2.4	2.4	2.9	3.6	2.6	3.2	2.8	2.1	2.3	2.4	2.7	3.4	4.9	3.6	3.9	4.8	4.5	4.6	5.1	4.6	4.6	6.0	4.2	3.7	3.5	2.8	2.6	2.5	2.5	1.6	1.9
6.2	6.2	6.4	6.1	6.1	6.5	5.9	6.0	6.3	6.0	6.2	6.6	5.6	5.7	6.1	6.4	7.1	7.8	7.8	8.0	8.4	8.4	9.0	9.9	8.9	8.1	9.4	9.7	9.6	8.7	8.2	8.6	8.0	7.2	6.3	6.2
8.7	8.7	9.0	9.3	9.8	10.0	9.2	8.7	9.3	9.0	8.5	9.0	8.1	8.5	8.8	9.6	11.0	13.5	15.3	16.4	16.7	17.4	18.1	17.5	14.9	15.3	17.8	18.9	18.4	18.0	17.7	16.8	15.7	14.5	11.1	9.1
10.3	10.0	10.1	10.5	10.8	11.3	12.1	13.1	13.2	11.9	10.9	10.5	10.8	11.2	11.8	12.6	13.7	14.7	15.5	16.1	16.6	17.2	18.0	18.4	18.6	18.7	18.5	18.0	17.3	16.7	16.2	15.5	14.8	13.7	11.4	10.6

Figure 29. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2001
Channel: HIRS15 (700 hPa)
NOAA15, using all observations



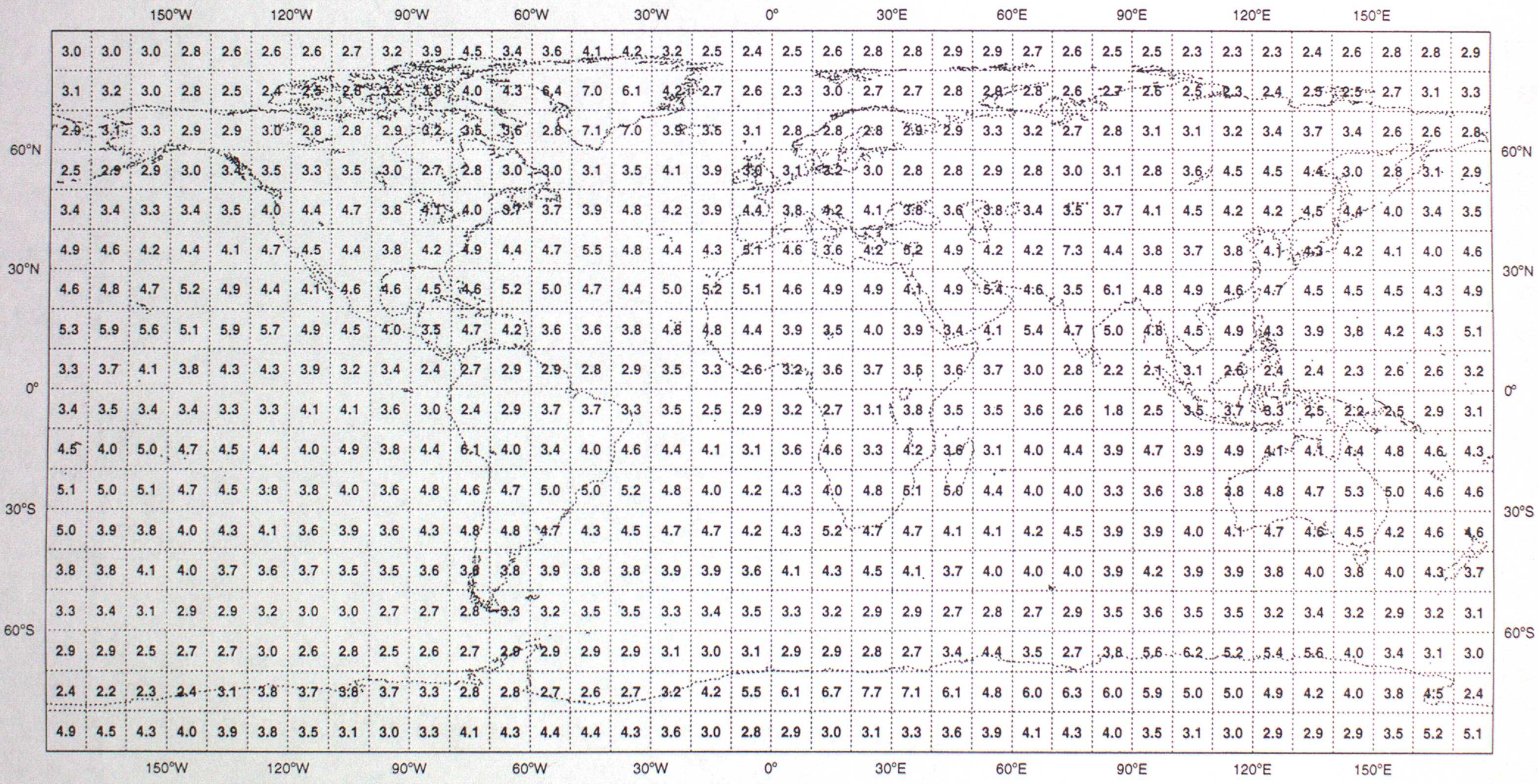
3.7	3.7	3.6	3.6	3.5	3.4	3.2	3.1	3.0	2.8	2.7	3.0	2.9	2.9	2.6	2.6	2.8	3.0	3.3	3.6	4.0	4.2	4.3	4.3	4.1	3.9	3.6	3.4	3.3	3.3	3.4	3.4	3.5	3.6	3.6	3.7
3.3	3.2	3.2	3.2	3.0	2.9	2.7	2.5	2.4	2.6	2.9	3.4	4.5	4.2	3.9	3.9	3.9	3.8	3.4	4.3	4.3	4.2	4.1	4.8	4.2	3.9	3.8	3.5	3.3	3.4	3.3	3.2	3.3	3.3	3.3	3.3
3.2	3.2	3.4	3.2	3.0	3.3	3.5	3.4	3.2	3.3	3.7	4.1	3.8	5.5	6.2	5.6	4.6	4.3	4.0	3.9	3.9	3.7	3.8	3.6	3.4	3.5	3.7	3.8	3.8	3.8	3.6	3.5	3.1	3.1	3.2	3.3
3.5	3.0	3.1	2.8	3.8	4.3	4.4	4.5	3.9	3.6	4.5	4.5	4.0	4.4	4.6	4.5	3.8	3.8	4.3	4.1	3.7	3.7	3.9	3.6	3.9	4.5	5.2	4.7	4.9	5.3	4.8	4.2	3.2	3.1	3.2	3.2
4.4	3.3	3.7	3.7	3.6	3.9	3.9	4.3	4.2	4.1	4.8	4.2	4.4	4.3	4.1	3.5	3.7	3.8	3.6	4.3	4.1	4.6	4.0	4.2	4.2	4.4	4.8	4.7	4.8	4.8	4.3	4.4	3.9	4.1	4.2	4.5
3.6	3.7	4.3	4.1	3.5	3.6	4.3	4.7	4.5	3.3	4.0	3.9	3.6	3.8	3.6	3.5	3.5	3.9	3.9	4.4	4.1	4.4	4.5	3.5	3.8	6.4	4.5	3.7	4.2	4.1	4.2	4.2	4.4	4.3	4.0	4.6
3.4	3.5	3.6	3.6	3.5	3.3	3.5	3.9	3.8	3.1	3.7	3.8	3.4	3.6	3.4	3.6	3.6	3.9	3.4	4.1	4.1	3.9	3.5	3.9	4.3	3.4	5.9	4.5	4.2	4.0	3.8	3.6	3.3	3.6	3.3	4.0
3.3	3.5	3.4	3.3	3.3	3.2	3.5	3.3	3.8	3.0	3.7	3.5	3.2	3.5	3.3	3.6	3.4	3.6	3.3	3.6	4.1	3.7	3.6	3.3	3.4	3.5	3.5	2.9	3.5	3.3	3.3	3.4	3.2	3.5	3.2	3.8
3.1	3.5	3.3	3.3	3.4	3.1	3.3	3.1	3.6	3.1	3.4	3.4	3.4	3.4	3.2	3.5	3.2	3.4	3.4	3.4	3.6	3.5	3.4	3.2	3.3	3.8	3.2	3.3	3.5	3.3	3.1	3.4	3.2	3.4	3.4	3.7
3.1	3.6	3.2	3.3	3.3	3.1	3.3	3.3	3.3	3.0	3.4	3.3	3.8	3.5	3.2	3.5	3.2	3.2	3.3	3.4	3.4	3.7	3.4	3.1	3.3	3.6	3.0	3.6	3.5	3.2	3.3	3.3	3.3	3.3	3.7	3.4
3.2	3.6	3.3	3.4	3.5	3.3	3.5	3.6	3.0	3.3	3.4	4.1	3.8	3.4	3.3	3.4	3.5	2.9	3.3	3.5	3.8	3.9	3.5	3.1	3.3	3.4	2.7	3.5	3.2	3.3	3.6	3.6	3.4	3.2	3.7	3.2
3.6	3.5	3.4	3.6	3.6	3.3	3.6	4.0	2.9	3.7	3.3	4.7	3.9	3.5	3.5	3.3	3.6	3.0	3.7	3.7	4.2	3.7	3.6	3.3	3.5	3.8	3.0	3.6	3.5	3.8	4.6	4.0	3.9	3.5	3.6	3.1
3.7	3.5	3.1	3.4	3.5	3.3	3.7	3.4	2.8	3.4	3.6	4.1	3.9	3.8	3.5	3.2	3.3	3.4	3.8	3.8	3.7	3.8	3.8	3.5	3.7	3.5	3.6	3.8	3.6	3.5	3.5	3.7	4.0	3.4	3.5	3.3
3.4	3.1	3.0	3.4	3.3	3.3	3.4	2.9	3.4	3.2	3.4	3.6	3.3	3.5	3.5	3.3	3.2	3.7	3.6	3.7	3.5	3.7	3.7	3.8	3.7	3.5	4.2	3.5	3.2	3.3	3.3	3.0	3.1	3.2	3.4	3.3
3.7	3.2	3.1	3.1	3.3	3.3	3.0	2.8	3.3	3.2	2.8	3.3	3.2	3.2	3.5	3.4	3.2	3.3	3.4	3.4	3.2	3.3	3.1	3.4	3.2	3.3	3.0	3.1	3.2	3.2	2.9	2.9	3.1	3.2	3.2	3.2
3.1	3.0	2.6	2.5	2.8	3.0	2.8	2.6	2.3	2.5	2.5	2.8	2.8	3.1	3.2	3.3	3.3	3.0	3.2	3.2	3.0	3.0	3.3	3.6	3.4	3.1	3.7	4.4	4.7	4.0	4.0	4.1	3.4	3.1	3.1	3.1
1.8	1.9	2.1	2.2	2.6	2.9	3.0	2.8	2.6	2.4	2.2	2.4	2.3	2.7	2.8	2.9	3.1	3.1	3.1	3.3	3.7	3.3	2.7	2.6	3.4	3.6	3.2	2.9	2.5	2.3	2.1	1.8	1.8	1.9	2.6	1.9
2.8	2.8	2.8	2.7	2.7	2.5	2.3	2.0	2.0	2.3	2.8	3.0	3.1	3.0	2.8	2.4	2.0	1.8	1.8	1.8	1.8	1.9	1.9	2.0	2.1	2.1	2.0	1.8	1.6	1.5	1.4	1.4	1.5	1.9	3.0	2.9

Figure 30. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2001
Channel: HIRS11 (500 - 700 hPa)
NOAA15, using all observations



7.4	7.4	7.4	7.7	8.0	8.1	8.3	8.4	9.0	10.6	12.5	10.8	11.6	12.4	13.2	11.1	9.2	8.4	7.9	7.5	7.6	7.8	8.0	7.9	8.1	8.0	7.9	8.0	8.0	8.1	8.1	8.2	8.0	7.9	7.6	7.6
5.1	4.9	5.2	6.0	6.4	6.8	7.4	7.3	7.5	8.3	9.0	8.8	12.3	19.4	18.4	10.9	6.6	5.0	4.0	4.8	5.0	5.2	5.5	5.8	5.9	5.5	6.2	7.1	7.5	7.6	8.0	8.0	7.8	7.0	6.0	5.3
3.9	3.5	4.1	5.3	6.0	5.7	5.5	6.3	6.7	6.8	8.3	5.5	5.1	9.9	5.3	3.6	3.1	2.9	3.1	3.3	3.4	4.0	4.9	5.3	5.4	5.6	6.0	7.5	7.7	8.6	9.7	11.4	10.9	8.1	6.5	5.1
3.5	2.5	1.9	1.5	2.1	3.8	3.0	3.1	3.2	3.7	3.7	3.9	2.4	1.4	1.1	.0	.2	1.2	.9	1.4	2.4	3.5	3.8	4.3	3.9	4.1	4.3	5.1	4.7	6.6	7.8	7.9	4.8	3.5	3.0	3.0
.4	.2	.4	.2	-.3	-.3	-.9	.0	.0	-.3	-.2	-.3	-1.4	-1.4	-2.2	-2.7	-2.2	-1.6	-.7	-.7	.1	.9	1.0	.4	.4	1.3	1.9	1.5	.9	1.8	2.1	1.7	.4	-.1	.1	-.3
-3.6	-4.3	-2.1	-2.8	-3.2	-4.3	-4.1	-3.2	-3.3	-4.9	-5.6	-5.5	-5.3	-3.8	-3.7	-4.4	-5.6	-3.0	-2.6	-2.8	-2.5	-4.5	-4.2	-3.7	-3.9	-.8	3.5	2.3	-1.2	-2.3	-3.4	-4.1	-4.0	-3.5	-3.8	-3.5
-7.8	-6.5	-6.4	-8.5	-8.2	-7.3	-7.2	-7.3	-7.1	-8.9	-9.4	-7.5	-6.3	-3.5	-3.9	-4.9	-6.4	-6.1	-7.2	-8.8	-9.4	-11.2	-11.3	-13.1	-13.6	-13.8	-9.7	-7.6	-6.5	-6.9	-7.9	-7.9	-7.7	-7.2	-8.2	-8.2
-8.9	-7.5	-6.6	-7.1	-7.0	-7.6	-7.9	-8.7	-6.7	-7.2	-6.6	-7.1	-6.4	-4.9	-6.3	-7.3	-8.9	-9.4	-13.5	-14.6	-13.2	-12.0	-14.4	-15.1	-12.6	-10.6	-9.6	-9.6	-10.0	-9.2	-7.6	-6.8	-7.4	-8.0	-8.8	-8.0
-5.6	-5.6	-7.4	-7.6	-6.5	-7.3	-7.8	-8.4	-6.7	-5.2	-4.0	-6.0	-6.2	-5.1	-4.2	-4.0	-6.0	-7.7	-5.8	-5.7	-5.0	-6.1	-9.2	-8.0	-4.8	-2.6	-2.3	-2.0	-2.7	-2.9	-3.9	-3.7	-4.0	-4.3	-4.3	-4.1
-7.0	-6.6	-8.9	-11.6	-12.8	-13.1	-11.8	-11.0	-10.4	-7.0	-2.5	-4.1	-4.9	-7.3	-9.3	-9.9	-10.9	-10.6	-6.8	-2.8	-3.6	-8.1	-9.2	-8.9	-6.1	-2.3	-2.2	-2.0	-3.1	-4.7	-5.0	-3.6	-3.8	-4.8	-4.7	-5.5
-6.0	-4.3	-6.2	-6.4	-6.4	-8.7	-10.1	-11.6	-14.1	-12.6	-8.7	-5.3	-3.8	-4.7	-7.4	-8.7	-9.9	-13.4	-12.1	-5.7	-3.8	-7.2	-8.6	-11.4	-10.8	-7.0	-8.6	-9.8	-12.7	-11.7	-9.1	-7.3	-8.1	-9.3	-8.2	-7.7
-4.9	-4.0	-6.0	-5.1	-3.1	-2.7	-4.7	-6.2	-8.4	-9.9	-13.2	-8.5	-7.6	-6.0	-4.1	-4.2	-4.5	-9.1	-9.7	-9.1	-5.9	-5.4	-7.2	-9.2	-9.4	-8.1	-9.2	-9.1	-12.2	-11.9	-8.3	-6.4	-6.8	-6.4	-5.2	-6.3
-3.5	-2.5	-3.4	-3.8	-2.8	-3.2	-3.4	-2.2	-3.7	-3.4	-6.4	-5.0	-5.4	-5.0	-4.6	-2.9	-.7	-3.0	-3.4	-6.2	-5.8	-4.4	-4.0	-4.4	-3.8	-4.1	-4.3	-4.6	-5.4	-5.9	-5.2	-5.1	-4.8	-3.4	-2.4	-5.1
-1.5	-2.1	-2.2	-1.8	-1.9	-1.4	-.7	-.5	-.9	-.6	-.7	-2.1	-2.2	-1.9	-2.3	-2.1	-1.4	-1.2	-1.2	-1.8	-1.8	-1.5	-1.0	-1.1	-.9	-.8	-.4	-1.0	-1.8	-2.3	-1.5	-1.7	-1.6	-2.5	-2.3	-1.1
.5	.1	.5	.6	.6	1.1	1.1	1.1	1.3	1.1	1.7	1.3	.8	1.2	.9	.7	.9	2.2	1.6	1.6	2.7	2.4	2.1	2.4	2.3	2.2	2.7	1.6	1.5	1.1	.6	.5	.5	.2	.2	1.1
3.5	3.2	3.4	2.7	3.0	3.3	3.1	2.6	3.2	2.9	2.8	3.0	2.2	2.1	2.6	2.6	3.1	4.2	4.5	4.2	4.3	4.5	5.3	6.4	5.7	5.2	7.2	8.0	8.0	5.9	5.2	5.9	4.3	3.4	3.2	3.7
4.4	4.8	5.4	6.2	7.2	7.8	6.6	5.3	6.0	5.5	4.7	5.5	4.3	4.5	4.6	6.1	8.4	13.0	16.3	18.5	19.1	20.5	22.2	20.6	14.8	16.0	22.3	25.5	24.2	23.3	22.5	20.0	17.5	14.8	8.2	4.8
6.5	6.1	6.3	7.1	7.7	8.7	10.4	12.5	12.5	9.9	7.9	7.4	7.8	8.1	9.3	10.9	13.2	15.5	17.3	18.7	19.3	20.8	22.7	23.8	24.4	24.7	24.2	23.0	21.4	20.0	18.7	17.2	15.6	13.1	8.9	7.3

Figure 31. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2001
Channel: HIRS11 (500 - 700 hPa)
NOAA15, using all observations

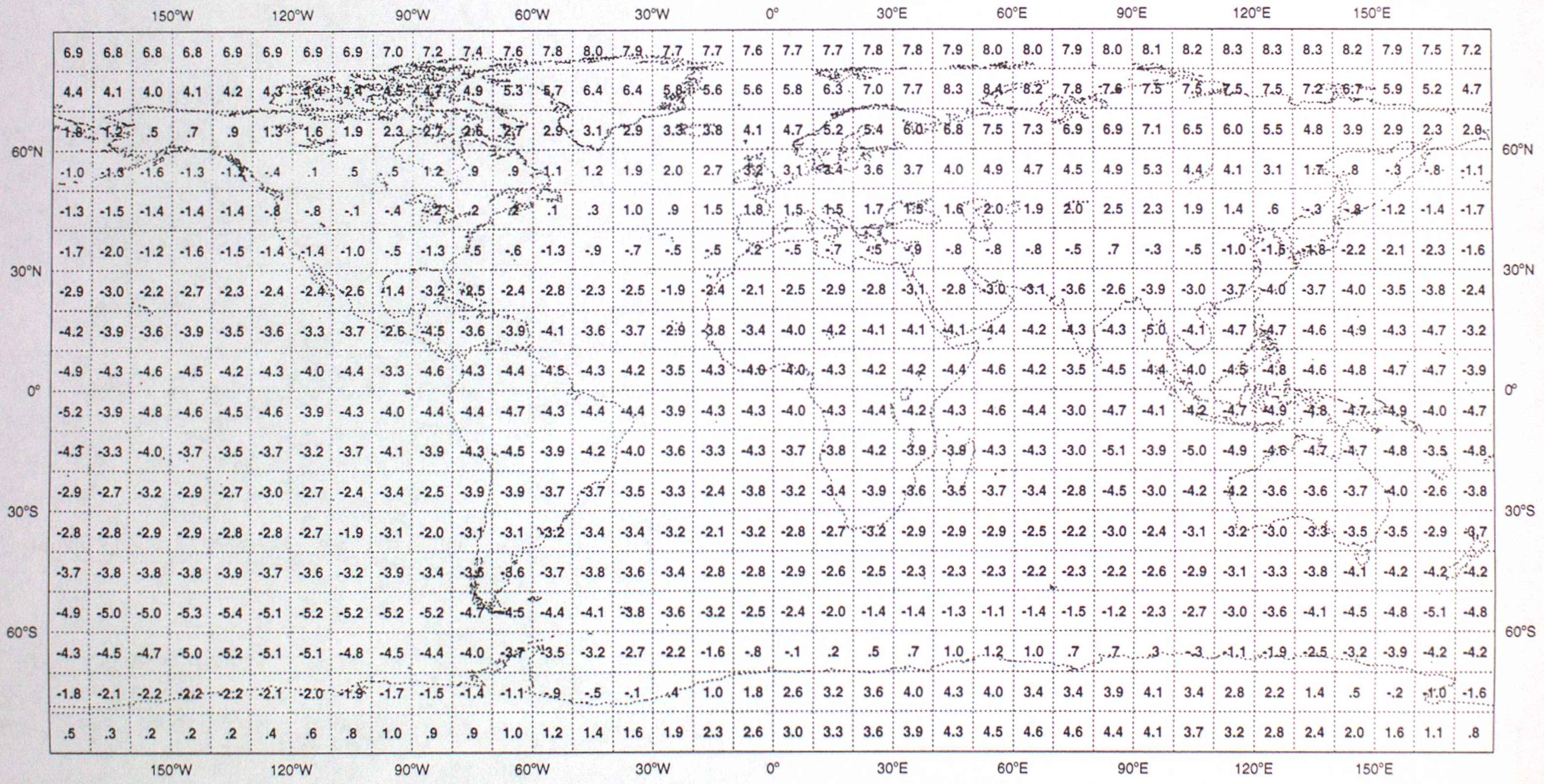


3.0	3.0	3.0	2.8	2.6	2.6	2.6	2.7	3.2	3.9	4.5	3.4	3.6	4.1	4.2	3.2	2.5	2.4	2.5	2.6	2.8	2.8	2.9	2.9	2.7	2.6	2.5	2.5	2.3	2.3	2.3	2.4	2.6	2.8	2.8	2.9
3.1	3.2	3.0	2.8	2.5	2.4	2.5	2.8	3.2	3.8	4.0	4.3	6.4	7.0	6.1	4.2	2.7	2.6	2.3	3.0	2.7	2.7	2.8	2.8	2.8	2.6	2.7	2.6	2.5	2.3	2.4	2.5	2.5	2.7	3.1	3.3
2.9	3.1	3.3	2.9	2.9	3.0	2.8	2.8	2.9	3.2	3.5	3.6	2.8	7.1	7.0	3.9	3.5	3.1	2.8	2.8	2.8	2.9	2.9	3.3	3.2	2.7	2.8	3.1	3.1	3.2	3.4	3.7	3.4	2.6	2.6	2.8
2.5	2.9	2.9	3.0	3.4	3.5	3.3	3.5	3.0	2.7	2.8	3.0	3.0	3.1	3.5	4.1	3.9	3.0	3.1	3.2	3.0	2.8	2.8	2.9	2.8	3.0	3.1	2.8	3.6	4.5	4.5	4.4	3.0	2.8	3.1	2.9
3.4	3.4	3.3	3.4	3.5	4.0	4.4	4.7	3.8	4.1	4.0	3.7	3.7	3.9	4.8	4.2	3.9	4.4	3.8	4.2	4.1	3.8	3.6	3.8	3.4	3.5	3.7	4.1	4.5	4.2	4.2	4.5	4.4	4.0	3.4	3.5
4.9	4.6	4.2	4.4	4.1	4.7	4.5	4.4	3.8	4.2	4.9	4.4	4.7	5.5	4.8	4.4	4.3	5.1	4.6	3.6	4.2	5.2	4.9	4.2	4.2	7.3	4.4	3.8	3.7	3.8	4.1	4.3	4.2	4.1	4.0	4.6
4.6	4.8	4.7	5.2	4.9	4.4	4.1	4.6	4.6	4.5	4.6	5.2	5.0	4.7	4.4	5.0	5.2	5.1	4.6	4.9	4.9	4.1	4.9	5.4	4.6	3.5	6.1	4.8	4.9	4.6	4.7	4.5	4.5	4.5	4.3	4.9
5.3	5.9	5.6	5.1	5.9	5.7	4.9	4.5	4.0	3.5	4.7	4.2	3.6	3.6	3.8	4.8	4.8	4.4	3.9	3.5	4.0	3.9	3.4	4.1	5.4	4.7	5.0	4.8	4.5	4.9	4.3	3.9	3.8	4.2	4.3	5.1
3.3	3.7	4.1	3.8	4.3	4.3	3.9	3.2	3.4	2.4	2.7	2.9	2.9	2.8	2.9	3.5	3.3	2.6	3.2	3.6	3.7	3.5	3.6	3.7	3.0	2.8	2.2	2.1	3.1	2.6	2.4	2.4	2.3	2.6	2.6	3.2
3.4	3.5	3.4	3.4	3.3	3.3	4.1	4.1	3.6	3.0	2.4	2.9	3.7	3.7	3.3	3.5	2.5	2.9	3.2	2.7	3.1	3.8	3.5	3.5	3.6	2.6	1.8	2.5	3.5	3.7	3.3	2.5	2.2	2.5	2.9	3.1
4.5	4.0	5.0	4.7	4.5	4.4	4.0	4.9	3.8	4.4	6.1	4.0	3.4	4.0	4.6	4.4	4.1	3.1	3.6	4.6	3.3	4.2	3.6	3.1	4.0	4.4	3.9	4.7	3.9	4.9	4.1	4.1	4.4	4.8	4.6	4.3
5.1	5.0	5.1	4.7	4.5	3.8	3.8	4.0	3.6	4.8	4.6	4.7	5.0	5.0	5.2	4.8	4.0	4.2	4.3	4.0	4.8	5.1	5.0	4.4	4.0	4.0	3.3	3.6	3.8	3.8	4.8	4.7	5.3	5.0	4.6	4.6
5.0	3.9	3.8	4.0	4.3	4.1	3.6	3.9	3.6	4.3	4.8	4.8	4.7	4.3	4.5	4.7	4.7	4.2	4.3	5.2	4.7	4.7	4.1	4.1	4.2	4.5	3.9	3.9	4.0	4.1	4.7	4.6	4.5	4.2	4.6	4.6
3.8	3.8	4.1	4.0	3.7	3.6	3.7	3.5	3.5	3.6	3.8	3.8	3.9	3.8	3.8	3.9	3.9	3.6	4.1	4.3	4.5	4.1	3.7	4.0	4.0	4.0	3.9	4.2	3.9	3.9	3.8	4.0	3.8	4.0	4.3	3.7
3.3	3.4	3.1	2.9	2.9	3.2	3.0	3.0	2.7	2.7	2.8	3.3	3.2	3.5	3.5	3.3	3.4	3.5	3.3	3.2	2.9	2.9	2.7	2.8	2.7	2.9	3.5	3.6	3.5	3.5	3.2	3.4	3.2	2.9	3.2	3.1
2.9	2.9	2.5	2.7	2.7	3.0	2.6	2.8	2.5	2.6	2.7	2.8	2.9	2.9	2.9	3.1	3.0	3.1	2.9	2.9	2.8	2.7	3.4	4.4	3.5	2.7	3.8	5.6	6.2	5.2	5.4	5.6	4.0	3.4	3.1	3.0
2.4	2.2	2.3	2.4	3.1	3.8	3.7	3.8	3.7	3.3	2.8	2.8	2.7	2.6	2.7	3.2	4.2	5.5	6.1	6.7	7.7	7.1	6.1	4.8	6.0	6.3	6.0	5.9	5.0	5.0	4.9	4.2	4.0	3.8	4.5	2.4
4.9	4.5	4.3	4.0	3.9	3.8	3.5	3.1	3.0	3.3	4.1	4.3	4.4	4.4	4.3	3.6	3.0	2.8	2.9	3.0	3.1	3.3	3.6	3.9	4.1	4.3	4.0	3.5	3.1	3.0	2.9	2.9	2.9	3.5	5.2	5.1

Figure 32. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2001

Channel: HIRS4 (400 hPa)

NOAA15, using all observations



6.9	6.8	6.8	6.8	6.9	6.9	6.9	6.9	7.0	7.2	7.4	7.6	7.8	8.0	7.9	7.7	7.7	7.6	7.7	7.7	7.8	7.8	7.9	8.0	8.0	7.9	8.0	8.1	8.2	8.3	8.3	8.3	8.2	7.9	7.5	7.2
4.4	4.1	4.0	4.1	4.2	4.3	4.4	4.4	4.5	4.7	4.9	5.3	5.7	6.4	6.4	5.8	5.6	5.6	5.8	6.3	7.0	7.7	8.3	8.4	8.2	7.8	7.6	7.5	7.5	7.5	7.5	7.2	6.7	5.9	5.2	4.7
1.8	1.2	.5	.7	.9	1.3	1.6	1.9	2.3	2.7	2.6	2.7	2.9	3.1	2.9	3.3	3.8	4.1	4.7	5.2	5.4	6.0	6.8	7.5	7.3	6.9	6.9	7.1	6.5	6.0	5.5	4.8	3.9	2.9	2.3	2.8
-1.0	-1.8	-1.6	-1.3	-1.2	-.4	.1	.5	.5	1.2	.9	.9	1.1	1.2	1.9	2.0	2.7	3.2	3.1	3.4	3.6	3.7	4.0	4.9	4.7	4.5	4.9	5.3	4.4	4.1	3.1	1.7	.8	-.3	-.8	-1.1
-1.3	-1.5	-1.4	-1.4	-1.4	-.8	-.8	-.1	-.4	-.2	.2	.2	.1	.3	1.0	.9	1.5	1.8	1.5	1.5	1.7	1.5	1.6	2.0	1.9	2.0	2.5	2.3	1.9	1.4	.6	-.3	-.8	-1.2	-1.4	-1.7
-1.7	-2.0	-1.2	-1.6	-1.5	-1.4	-1.4	-1.0	-.5	-1.3	.5	-.6	-1.3	-.9	-.7	-.5	-.5	-.2	-.5	-.7	.5	-.9	-.8	-.8	-.8	-.5	.7	-.3	-.5	-1.0	-1.5	-1.8	-2.2	-2.1	-2.3	-1.6
-2.9	-3.0	-2.2	-2.7	-2.3	-2.4	-2.4	-2.6	-1.4	-3.2	-2.5	-2.4	-2.8	-2.3	-2.5	-1.9	-2.4	-2.1	-2.5	-2.9	-2.8	-3.1	-2.8	-3.0	-3.1	-3.6	-2.6	-3.9	-3.0	-3.7	-4.0	-3.7	-4.0	-3.5	-3.8	-2.4
-4.2	-3.9	-3.6	-3.9	-3.5	-3.6	-3.3	-3.7	-2.6	-4.5	-3.6	-3.9	-4.1	-3.6	-3.7	-2.9	-3.8	-3.4	-4.0	-4.2	-4.1	-4.1	-4.1	-4.4	-4.2	-4.3	-4.3	-5.0	-4.1	-4.7	-4.7	-4.6	-4.9	-4.3	-4.7	-3.2
-4.9	-4.3	-4.6	-4.5	-4.2	-4.3	-4.0	-4.4	-3.3	-4.6	-4.3	-4.4	-4.5	-4.3	-4.2	-3.5	-4.3	-4.0	-4.0	-4.3	-4.2	-4.2	-4.4	-4.6	-4.2	-3.5	-4.5	-4.4	-4.0	-4.5	-4.8	-4.6	-4.8	-4.7	-4.7	-3.9
-5.2	-3.9	-4.8	-4.6	-4.5	-4.6	-3.9	-4.3	-4.0	-4.4	-4.4	-4.7	-4.3	-4.4	-4.4	-3.9	-4.3	-4.3	-4.0	-4.3	-4.4	-4.2	-4.3	-4.6	-4.4	-3.0	-4.7	-4.1	-4.2	-4.7	-4.9	-4.8	-4.7	-4.9	-4.0	-4.7
-4.3	-3.3	-4.0	-3.7	-3.5	-3.7	-3.2	-3.7	-4.1	-3.9	-4.3	-4.5	-3.9	-4.2	-4.0	-3.6	-3.3	-4.3	-3.7	-3.8	-4.2	-3.9	-3.9	-4.3	-4.3	-3.0	-5.1	-3.9	-5.0	-4.9	-4.6	-4.7	-4.7	-4.8	-3.5	-4.8
-2.9	-2.7	-3.2	-2.9	-2.7	-3.0	-2.7	-2.4	-3.4	-2.5	-3.9	-3.9	-3.7	-3.7	-3.5	-3.3	-2.4	-3.8	-3.2	-3.4	-3.9	-3.6	-3.5	-3.7	-3.4	-2.8	-4.5	-3.0	-4.2	-4.2	-3.6	-3.6	-3.7	-4.0	-2.6	-3.8
-2.8	-2.8	-2.9	-2.9	-2.8	-2.8	-2.7	-1.9	-3.1	-2.0	-3.1	-3.1	-3.2	-3.4	-3.4	-3.2	-2.1	-3.2	-2.8	-2.7	-3.2	-2.9	-2.9	-2.9	-2.5	-2.2	-3.0	-2.4	-3.1	-3.2	-3.0	-3.3	-3.5	-3.5	-2.9	-3.7
-3.7	-3.8	-3.8	-3.8	-3.9	-3.7	-3.6	-3.2	-3.9	-3.4	-3.5	-3.6	-3.7	-3.8	-3.6	-3.4	-2.8	-2.8	-2.9	-2.6	-2.5	-2.3	-2.3	-2.3	-2.2	-2.3	-2.2	-2.6	-2.9	-3.1	-3.3	-3.8	-4.1	-4.2	-4.2	-4.2
-4.9	-5.0	-5.0	-5.3	-5.4	-5.1	-5.2	-5.2	-5.2	-5.2	-4.7	-4.5	-4.4	-4.1	-3.8	-3.6	-3.2	-2.5	-2.4	-2.0	-1.4	-1.4	-1.3	-1.1	-1.4	-1.5	-1.2	-2.3	-2.7	-3.0	-3.6	-4.1	-4.5	-4.8	-5.1	-4.8
-4.3	-4.5	-4.7	-5.0	-5.2	-5.1	-5.1	-4.8	-4.5	-4.4	-4.0	-3.7	-3.5	-3.2	-2.7	-2.2	-1.6	-.8	-.1	.2	.5	.7	1.0	1.2	1.0	.7	.7	.3	-.3	-1.1	-1.9	-2.5	-3.2	-3.9	-4.2	-4.2
-1.8	-2.1	-2.2	-2.2	-2.2	-2.1	-2.0	-1.9	-1.7	-1.5	-1.4	-1.1	-.9	-.5	-.1	.4	1.0	1.8	2.6	3.2	3.6	4.0	4.3	4.0	3.4	3.4	3.9	4.1	3.4	2.8	2.2	1.4	.5	-.2	-1.0	-1.6
.5	.3	.2	.2	.2	.4	.6	.8	1.0	.9	.9	1.0	1.2	1.4	1.6	1.9	2.3	2.6	3.0	3.3	3.6	3.9	4.3	4.5	4.6	4.6	4.4	4.1	3.7	3.2	2.8	2.4	2.0	1.6	1.1	.8

Figure 33. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2001

Channel: HIRS4 (400 hPa)

NOAA15, using all observations

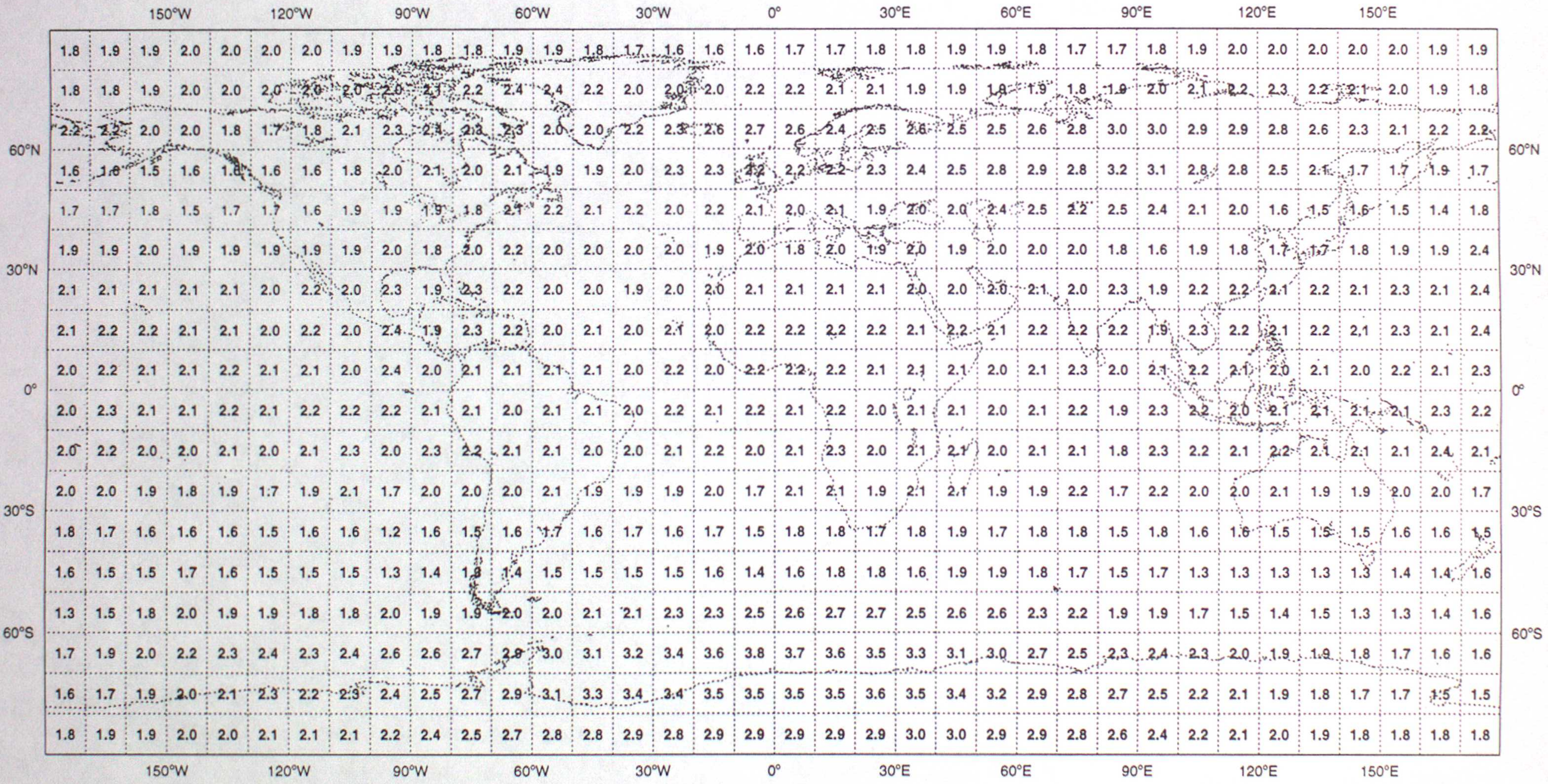

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
1.8 1.9 1.9 2.0 2.0 2.0 2.0 1.9 1.9 1.8 1.8 1.9 1.9 1.8 1.7 1.6 1.6 1.6 1.7 1.7 1.8 1.8 1.9 1.9 1.8 1.7 1.7 1.8 1.9 2.0 2.0 2.0 2.0 2.0 1.9 1.9
1.8 1.8 1.9 2.0 2.0 2.0 2.0 2.0 2.0 2.1 2.2 2.4 2.4 2.2 2.0 2.0 2.0 2.2 2.2 2.1 2.1 1.9 1.9 1.8 1.9 1.8 1.9 2.0 2.1 2.2 2.3 2.2 2.1 2.0 1.9 1.8
2.2 2.2 2.0 2.0 1.8 1.7 1.8 2.1 2.3 2.4 2.3 2.3 2.0 2.0 2.2 2.3 2.6 2.7 2.6 2.4 2.5 2.6 2.5 2.5 2.6 2.8 3.0 3.0 2.9 2.9 2.8 2.6 2.3 2.1 2.2 2.2
60°N
1.6 1.6 1.5 1.6 1.6 1.6 1.6 1.8 2.0 2.1 2.0 2.1 1.9 1.9 2.0 2.3 2.3 2.2 2.2 2.2 2.3 2.4 2.5 2.8 2.9 2.8 3.2 3.1 2.8 2.8 2.5 2.1 1.7 1.7 1.9 1.7
1.7 1.7 1.8 1.5 1.7 1.7 1.6 1.9 1.9 1.9 1.8 2.1 2.2 2.1 2.2 2.0 2.2 2.1 2.0 2.1 1.9 2.0 2.0 2.4 2.5 2.2 2.5 2.4 2.1 2.0 1.6 1.5 1.6 1.5 1.4 1.8
1.9 1.9 2.0 1.9 1.9 1.9 1.9 1.9 2.0 1.8 2.0 2.2 2.0 2.0 2.0 2.0 1.9 2.0 1.8 2.0 1.9 2.0 1.9 2.0 2.0 2.0 1.8 1.6 1.9 1.8 1.7 1.7 1.8 1.9 1.9 2.4
30°N
2.1 2.1 2.1 2.1 2.1 2.0 2.2 2.0 2.3 1.9 2.3 2.2 2.0 2.0 1.9 2.0 2.0 2.1 2.1 2.1 2.1 2.0 2.0 2.0 2.1 2.0 2.3 1.9 2.2 2.2 2.1 2.2 2.1 2.3 2.1 2.4
2.1 2.2 2.2 2.1 2.1 2.0 2.2 2.0 2.4 1.9 2.3 2.2 2.0 2.1 2.0 2.1 2.0 2.2 2.2 2.2 2.2 2.1 2.2 2.1 2.2 2.2 2.2 1.9 2.3 2.2 2.1 2.2 2.1 2.3 2.1 2.4
2.0 2.2 2.1 2.1 2.2 2.1 2.1 2.0 2.4 2.0 2.1 2.1 2.1 2.1 2.0 2.2 2.0 2.2 2.2 2.2 2.1 2.1 2.1 2.0 2.1 2.3 2.0 2.1 2.2 2.1 2.0 2.1 2.0 2.2 2.1 2.3
0°
2.0 2.3 2.1 2.1 2.2 2.1 2.2 2.2 2.2 2.1 2.1 2.0 2.1 2.1 2.0 2.2 2.1 2.2 2.1 2.2 2.0 2.1 2.1 2.0 2.1 2.2 1.9 2.3 2.2 2.0 2.1 2.1 2.1 2.1 2.3 2.2
2.0 2.2 2.0 2.0 2.1 2.0 2.1 2.3 2.0 2.3 2.2 2.1 2.1 2.0 2.0 2.1 2.2 2.0 2.1 2.3 2.0 2.1 2.1 2.0 2.1 2.1 1.8 2.3 2.2 2.1 2.2 2.1 2.1 2.1 2.4 2.1
2.0 2.0 1.9 1.8 1.9 1.7 1.9 2.1 1.7 2.0 2.0 2.0 2.1 1.9 1.9 1.9 2.0 1.7 2.1 2.1 1.9 2.1 2.1 1.9 1.9 2.2 1.7 2.2 2.0 2.0 2.1 1.9 1.9 2.0 2.0 1.7
30°S
1.8 1.7 1.6 1.6 1.6 1.5 1.6 1.6 1.2 1.6 1.5 1.6 1.7 1.6 1.7 1.6 1.7 1.5 1.8 1.8 1.7 1.8 1.9 1.7 1.8 1.8 1.5 1.8 1.6 1.6 1.5 1.5 1.5 1.6 1.6 1.5
1.6 1.5 1.5 1.7 1.6 1.5 1.5 1.5 1.3 1.4 1.3 1.4 1.5 1.5 1.5 1.5 1.6 1.4 1.6 1.8 1.8 1.6 1.9 1.9 1.8 1.7 1.5 1.7 1.3 1.3 1.3 1.3 1.3 1.4 1.4 1.6
1.3 1.5 1.8 2.0 1.9 1.9 1.8 1.8 2.0 1.9 1.9 2.0 2.0 2.1 2.1 2.3 2.3 2.5 2.6 2.7 2.7 2.5 2.6 2.6 2.3 2.2 1.9 1.9 1.7 1.5 1.4 1.5 1.3 1.3 1.4 1.6
60°S
1.7 1.9 2.0 2.2 2.3 2.4 2.3 2.4 2.6 2.6 2.7 2.8 3.0 3.1 3.2 3.4 3.6 3.8 3.7 3.6 3.5 3.3 3.1 3.0 2.7 2.5 2.3 2.4 2.3 2.0 1.9 1.9 1.8 1.7 1.6 1.6
1.6 1.7 1.9 2.0 2.1 2.3 2.2 2.3 2.4 2.5 2.7 2.9 3.1 3.3 3.4 3.4 3.5 3.5 3.5 3.5 3.6 3.5 3.4 3.2 2.9 2.8 2.7 2.5 2.2 2.1 1.9 1.8 1.7 1.7 1.5 1.5
1.8 1.9 1.9 2.0 2.0 2.1 2.1 2.1 2.2 2.4 2.5 2.7 2.8 2.8 2.9 2.8 2.9 2.9 2.9 2.9 2.9 3.0 3.0 2.9 2.9 2.8 2.6 2.4 2.2 2.1 2.0 1.9 1.8 1.8 1.8 1.8
150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E

Figure 34. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2001

Channel: AMSUA-5 (700 hPa)

NOAA15, using all observations

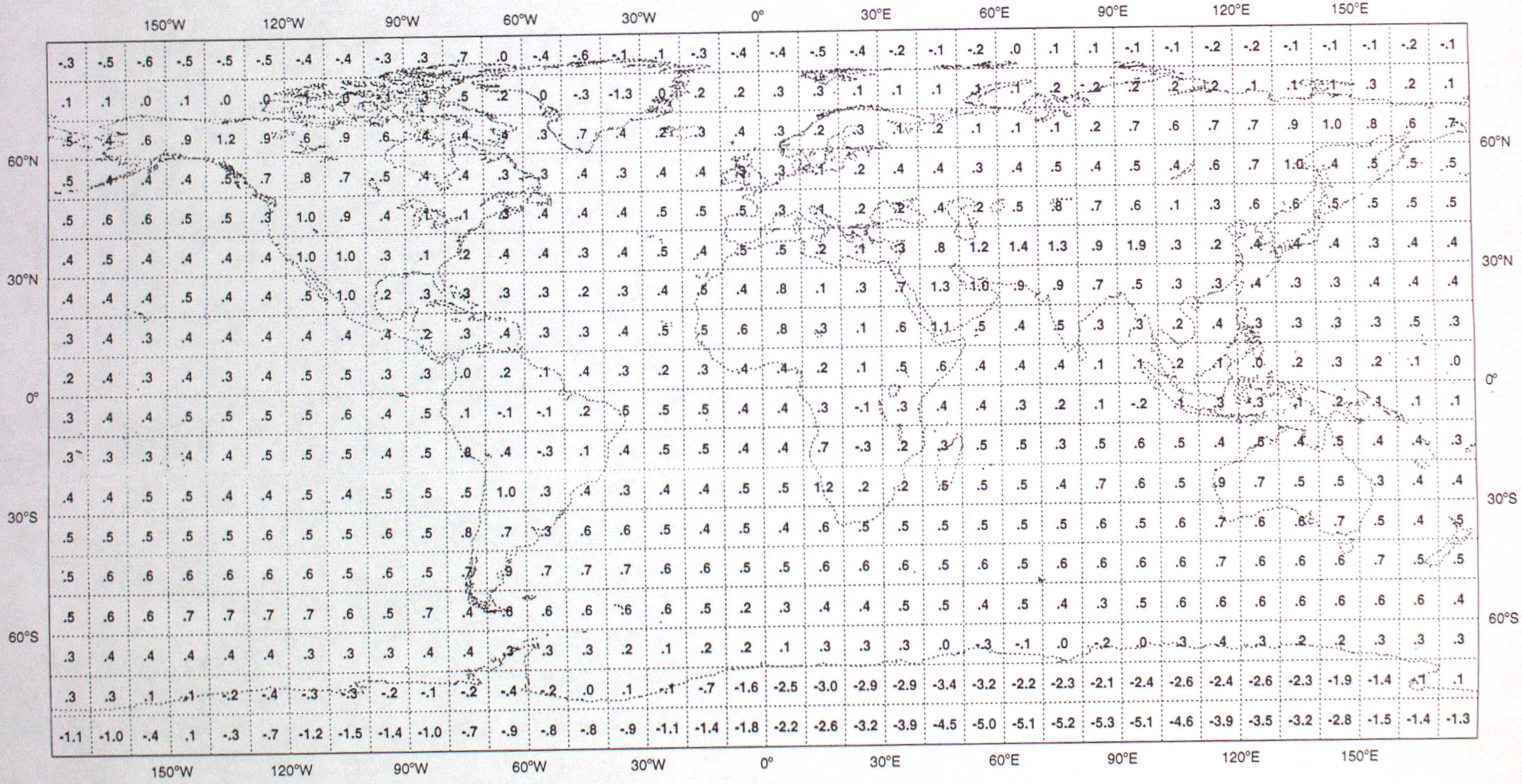
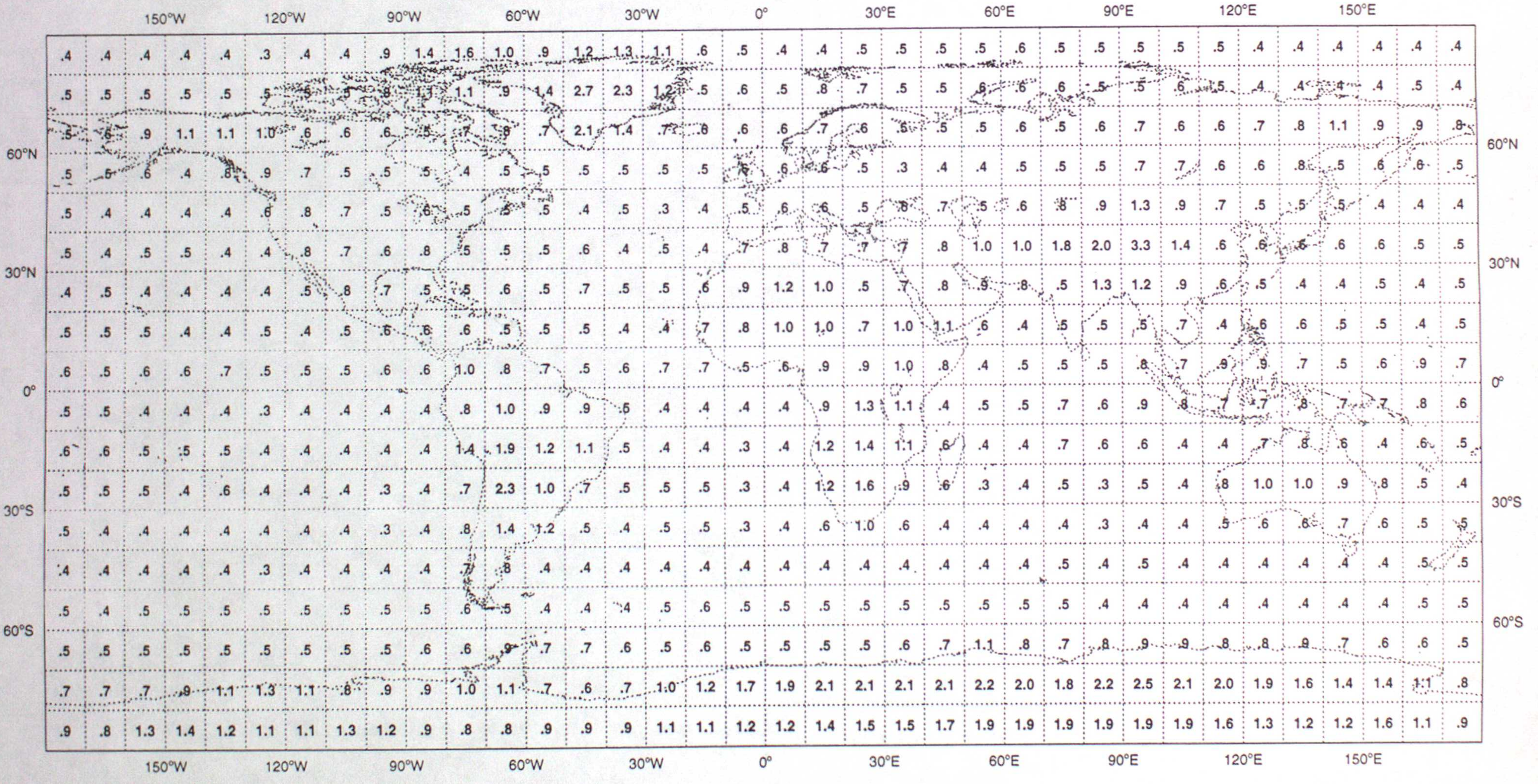

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
-.3 -.5 -.6 -.5 -.5 -.5 -.4 -.4 -.3 .3 .7 .0 -.4 -.6 -.1 .1 -.3 -.4 -.4 -.5 -.4 -.2 -.1 -.2 .0 .1 .1 -.1 -.1 -.2 -.2 -.1 -.1 -.1 -.2 -.1
.1 .1 .0 .1 .0 .0 .1 .0 .1 .3 .5 .2 .0 -.3 -1.3 .0 .2 .2 .3 .3 .1 .1 .1 .1 .1 .2 .2 .2 .2 .2 .1 .1 .1 .3 .2 .1
.5 .4 .6 .9 1.2 .9 .6 .9 .6 .4 .4 .4 .3 .7 .4 .2 .3 .4 .3 .2 .3 .1 .2 .1 .1 .1 .2 .7 .6 .7 .7 .9 1.0 .8 .6 .7
.5 .4 .4 .4 .5 .7 .8 .7 .5 .4 .4 .3 .3 .4 .3 .4 .4 .3 .3 .1 .2 .4 .4 .3 .4 .5 .4 .5 .4 .6 .7 1.0 .4 .5 .5 .5
.5 .6 .6 .5 .5 .3 1.0 .9 .4 .1 .1 .3 .4 .4 .4 .5 .5 .5 .3 .1 .2 .2 .4 .2 .5 .8 .7 .6 .1 .3 .6 .6 .5 .5 .5 .5
.4 .5 .4 .4 .4 .4 1.0 1.0 .3 .1 .2 .4 .4 .3 .4 .5 .4 .5 .5 .2 .1 .3 .8 1.2 1.4 1.3 .9 1.9 .3 .2 .4 .4 .4 .3 .4 .4
.4 .4 .4 .5 .4 .4 .5 1.0 .2 .3 .3 .3 .3 .2 .3 .4 .6 .4 .8 .1 .3 .7 1.3 1.0 .9 .9 .7 .5 .3 .3 .4 .3 .3 .4 .4 .4
.3 .4 .3 .4 .4 .4 .4 .4 .4 .2 .3 .4 .3 .3 .4 .5 .5 .6 .8 .3 .1 .6 1.1 .5 .4 .5 .3 .3 .2 .4 .3 .3 .3 .3 .5 .3
.2 .4 .3 .4 .3 .4 .5 .5 .3 .3 .0 .2 .1 .4 .3 .2 .3 .4 .4 .2 .1 .5 .6 .4 .4 .4 .1 .1 .2 .1 .0 .2 .3 .2 .1 .0
.3 .4 .4 .5 .5 .5 .5 .6 .4 .5 .1 -.1 -.1 .2 .5 .5 .5 .4 .4 .3 -.1 .3 .4 .4 .3 .2 .1 -.2 .1 .3 .3 .1 .2 .1 .1 .1
.3 .3 .3 .4 .4 .5 .5 .5 .4 .5 .8 .4 -.3 .1 .4 .5 .5 .4 .4 .7 -.3 .2 .3 .5 .5 .3 .5 .6 .5 .4 .5 .4 .5 .4 .4 .3
.4 .4 .5 .5 .4 .4 .5 .4 .5 .5 .5 1.0 .3 .4 .3 .4 .4 .5 .5 1.2 .2 .2 .5 .5 .5 .4 .7 .6 .5 .9 .7 .5 .5 .3 .4 .4
.5 .5 .5 .5 .5 .6 .5 .5 .6 .5 .8 .7 .3 .6 .6 .5 .4 .5 .4 .6 .5 .5 .5 .5 .5 .5 .6 .5 .6 .7 .6 .6 .7 .5 .4 .5
.5 .6 .6 .6 .6 .6 .6 .5 .6 .5 .7 .9 .7 .7 .7 .6 .6 .5 .5 .6 .6 .6 .5 .6 .5 .6 .6 .6 .6 .7 .6 .6 .6 .7 .5 .5
.5 .6 .6 .7 .7 .7 .7 .6 .5 .7 .4 .6 .6 .6 .6 .6 .5 .2 .3 .4 .4 .5 .5 .4 .5 .4 .3 .5 .6 .6 .6 .6 .6 .6 .6 .4
.3 .4 .4 .4 .4 .4 .3 .3 .3 .4 .4 .3 .3 .3 .2 .1 .2 .2 .1 .3 .3 .3 .0 -.3 -.1 .0 -.2 .0 .3 .4 .3 .2 .2 .3 .3 .3
.3 .3 .1 .1 -.2 -.4 -.3 -.3 -.2 -.1 -.2 -.4 -.2 .0 .1 -.1 -.7 -1.6 -2.5 -3.0 -2.9 -2.9 -3.4 -3.2 -2.2 -2.3 -2.1 -2.4 -2.6 -2.4 -2.6 -2.3 -1.9 -1.4 -.1 .1
-1.1 -1.0 -.4 .1 -.3 -.7 -1.2 -1.5 -1.4 -1.0 -.7 -.9 -.8 -.8 -.9 -1.1 -1.4 -1.8 -2.2 -2.6 -3.2 -3.9 -4.5 -5.0 -5.1 -5.2 -5.3 -5.1 -4.6 -3.9 -3.5 -3.2 -2.8 -1.5 -1.4 -1.3

Figure 35. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2001
Channel: AMSUA-5 (700 hPa)
NOAA15, using all observations



.4	.4	.4	.4	.4	.3	.4	.4	.9	1.4	1.6	1.0	.9	1.2	1.3	1.1	.6	.5	.4	.4	.5	.5	.5	.5	.6	.5	.5	.5	.5	.5	.4	.4	.4	.4	.4	.4
.5	.5	.5	.5	.5	.5	.5	.5	.8	1.1	1.1	.9	1.4	2.7	2.3	1.2	.5	.6	.5	.8	.7	.5	.5	.6	.6	.6	.5	.5	.6	.5	.4	.4	.4	.4	.5	.4
.5	.6	.9	1.1	1.1	1.0	.6	.6	.6	.5	.7	.8	.7	2.1	1.4	.7	.8	.6	.6	.7	.6	.5	.5	.5	.6	.5	.6	.7	.6	.6	.7	.8	1.1	.9	.9	.8
.5	.5	.6	.4	.8	.9	.7	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.6	.6	.6	.5	.3	.4	.4	.5	.5	.5	.7	.7	.6	.6	.8	.5	.6	.6	.5
.5	.4	.4	.4	.4	.6	.8	.7	.5	.6	.5	.5	.5	.4	.5	.3	.4	.5	.6	.6	.5	.8	.7	.5	.6	.8	.9	1.3	.9	.7	.5	.5	.5	.4	.4	.4
.5	.4	.5	.5	.4	.4	.8	.7	.6	.8	.5	.5	.5	.6	.4	.5	.4	.7	.8	.7	.7	.7	.8	1.0	1.0	1.8	2.0	3.3	1.4	.6	.6	.6	.6	.6	.5	.5
.4	.5	.4	.4	.4	.4	.5	.8	.7	.5	.5	.6	.5	.7	.5	.5	.6	.9	1.2	1.0	.5	.7	.8	.9	.8	.5	1.3	1.2	.9	.6	.5	.4	.4	.5	.4	.5
.5	.5	.5	.4	.4	.5	.4	.5	.6	.6	.6	.5	.5	.5	.4	.4	.7	.8	1.0	1.0	.7	1.0	1.1	.6	.4	.5	.5	.5	.7	.4	.6	.6	.5	.5	.4	.5
.6	.5	.6	.6	.7	.5	.5	.5	.6	.6	1.0	.8	.7	.5	.6	.7	.7	.5	.6	.9	.9	1.0	.8	.4	.5	.5	.5	.8	.7	.9	.9	.7	.5	.6	.9	.7
.5	.5	.4	.4	.4	.3	.4	.4	.4	.4	.8	1.0	.9	.9	.5	.4	.4	.4	.4	.9	1.3	1.1	.4	.5	.5	.7	.6	.9	.8	.7	.7	.8	.7	.7	.8	.6
.6	.6	.5	.5	.5	.4	.4	.4	.4	.4	1.4	1.9	1.2	1.1	.5	.4	.4	.3	.4	1.2	1.4	1.1	.6	.4	.4	.7	.6	.6	.4	.4	.7	.8	.6	.4	.6	.5
.5	.5	.5	.4	.6	.4	.4	.4	.3	.4	.7	2.3	1.0	.7	.5	.5	.5	.3	.4	1.2	1.6	.9	.6	.3	.4	.5	.3	.5	.4	.8	1.0	1.0	.9	.8	.5	.4
.5	.4	.4	.4	.4	.4	.4	.4	.3	.4	.8	1.4	1.2	.5	.4	.5	.5	.3	.4	.6	1.0	.6	.4	.4	.4	.4	.3	.4	.4	.5	.6	.6	.7	.6	.5	.5
.4	.4	.4	.4	.4	.3	.4	.4	.4	.4	.7	.8	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5	.4	.5	.4	.4	.4	.4	.4	.4	.5	.5
.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.6	.5	.4	.4	.4	.5	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.5	.5
.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.6	.9	.7	.7	.6	.5	.6	.5	.5	.5	.5	.6	.7	1.1	.8	.7	.8	.9	.9	.8	.8	.9	.7	.6	.6	.5
.7	.7	.7	.9	1.1	1.3	1.1	.8	.9	.9	1.0	1.1	.7	.6	.7	1.0	1.2	1.7	1.9	2.1	2.1	2.1	2.1	2.2	2.0	1.8	2.2	2.5	2.1	2.0	1.9	1.6	1.4	1.4	1.1	.8
.9	.8	1.3	1.4	1.2	1.1	1.1	1.3	1.2	.9	.8	.8	.9	.9	.9	1.1	1.1	1.2	1.2	1.4	1.5	1.5	1.7	1.9	1.9	1.9	1.9	1.9	1.9	1.6	1.3	1.2	1.2	1.6	1.1	.9

Figure 36. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2001

Channel: AMSUA-7 (300 hPa)

NOAA15, using all observations

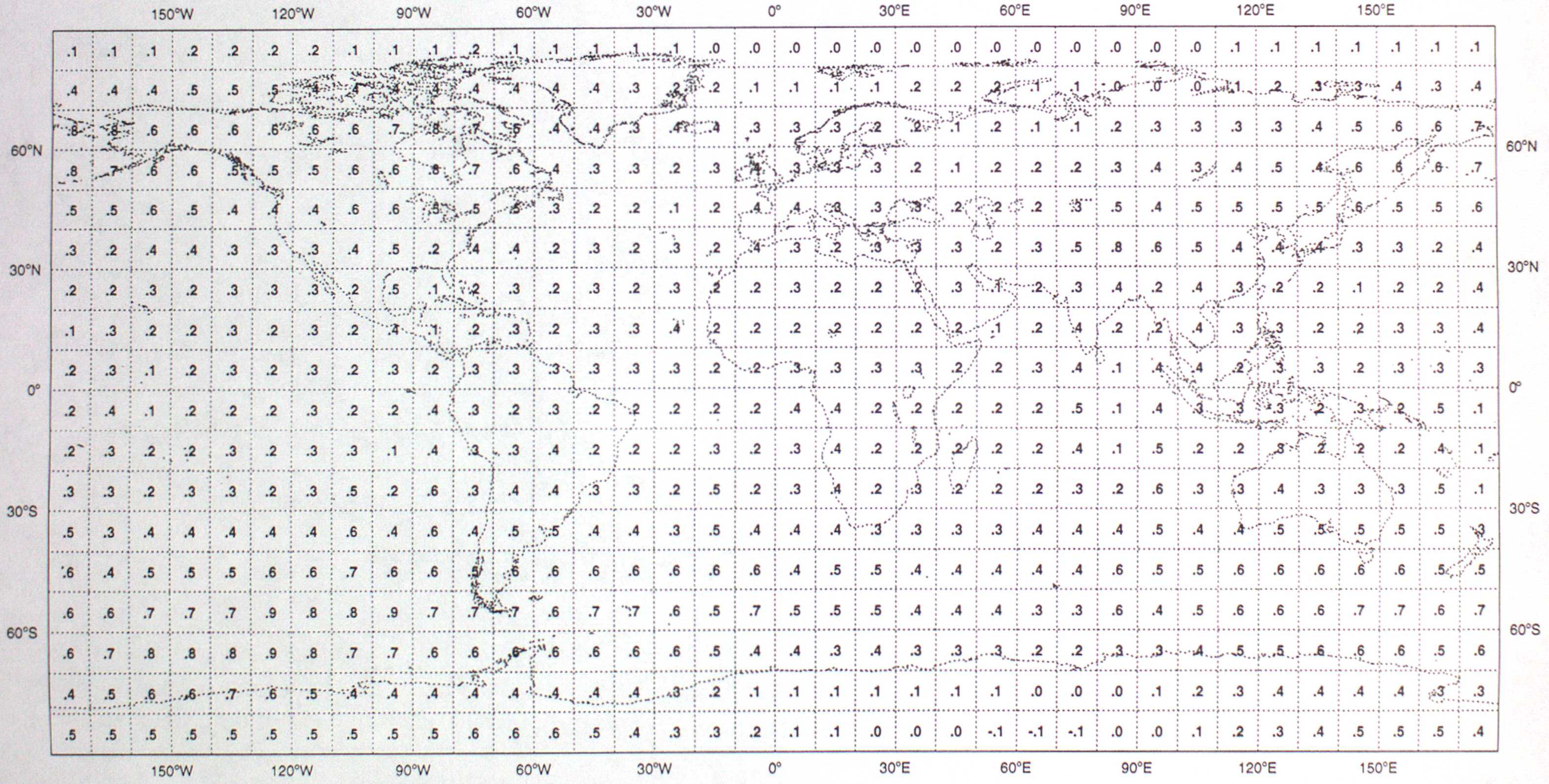

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 37. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2001
Channel: AMSUA-7 (300 hPa)
NOAA15, using all observations

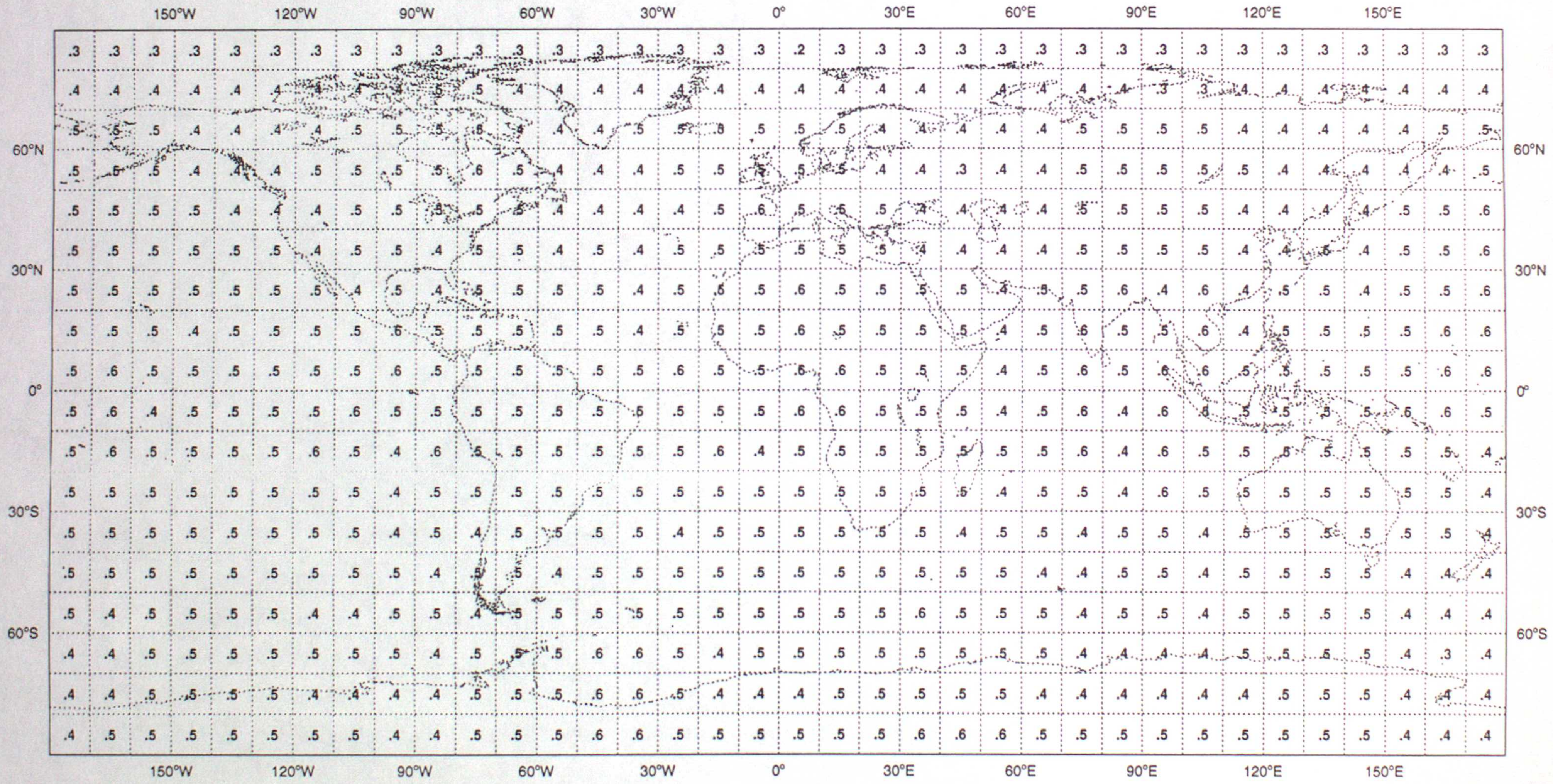
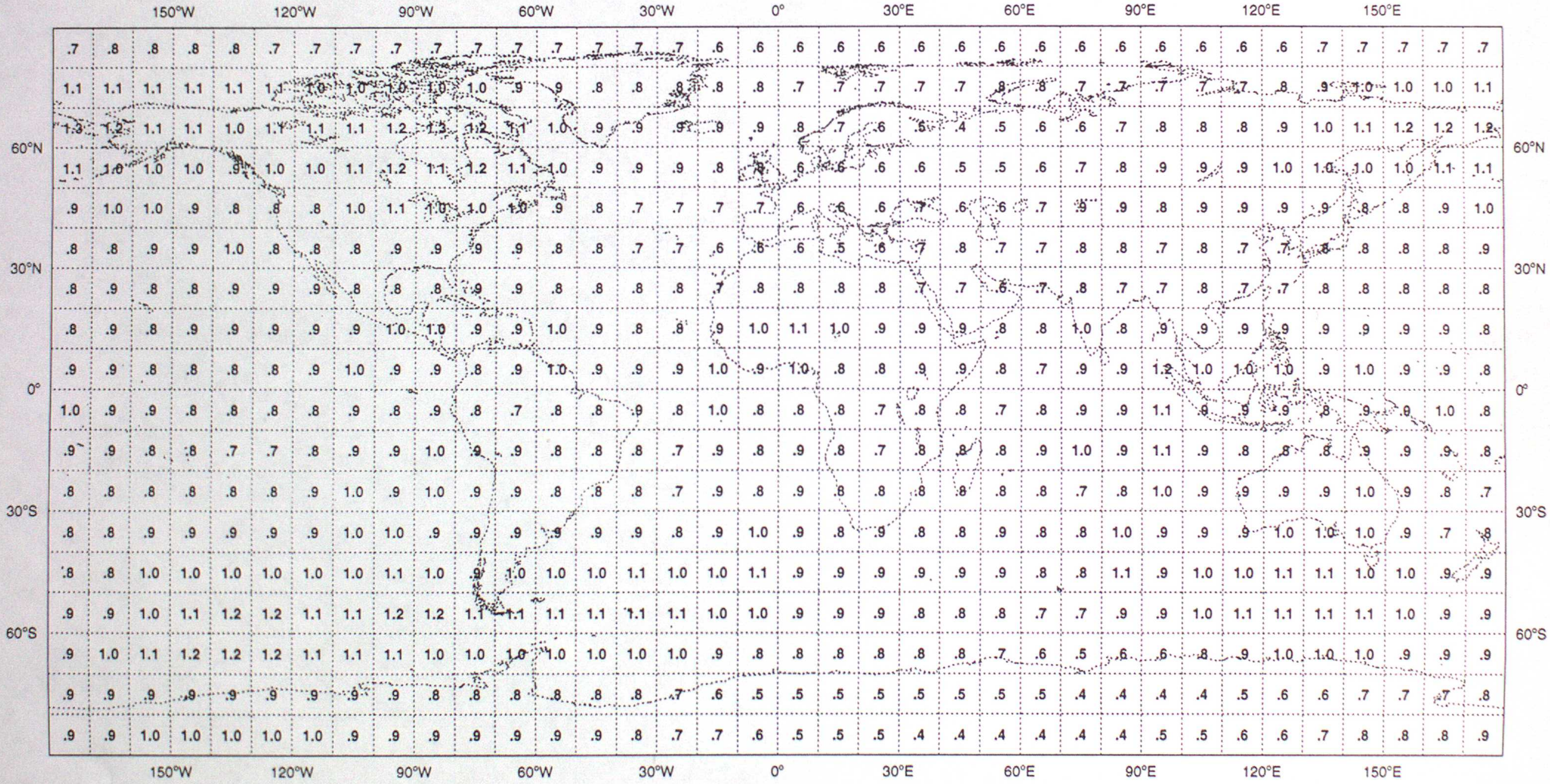

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 38. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2001
Channel: AMSUA-9 (100 hPa)
NOAA15, using all observations



.7	.8	.8	.8	.8	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.7	.7	.7	.7	.7
1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	.9	.9	.8	.8	.8	.8	.8	.7	.7	.7	.7	.7	.8	.8	.7	.7	.7	.7	.7	.8	.9	1.0	1.0	1.0	1.1
1.3	1.2	1.1	1.1	1.0	1.1	1.1	1.1	1.2	1.3	1.2	1.1	1.0	.9	.9	.9	.9	.9	.8	.7	.6	.5	.4	.5	.6	.6	.7	.8	.8	.8	.9	1.0	1.1	1.2	1.2	1.2
1.1	1.0	1.0	1.0	.9	1.0	1.0	1.1	1.2	1.1	1.2	1.1	1.0	.9	.9	.9	.8	.8	.6	.6	.6	.6	.5	.5	.6	.7	.8	.9	.9	.9	1.0	1.0	1.0	1.0	1.1	1.1
.9	1.0	1.0	.9	.8	.8	.8	1.0	1.1	1.0	1.0	1.0	.9	.8	.7	.7	.7	.7	.6	.6	.6	.7	.6	.6	.7	.9	.9	.8	.9	.9	.9	.9	.8	.8	.9	1.0
.8	.8	.9	.9	1.0	.8	.8	.8	.9	.9	.9	.9	.8	.8	.7	.7	.6	.6	.6	.5	.6	.7	.8	.7	.7	.8	.8	.7	.8	.7	.7	.8	.8	.8	.8	.9
.8	.9	.8	.8	.9	.9	.9	.8	.8	.8	.9	.9	.8	.8	.8	.8	.7	.8	.8	.8	.8	.7	.7	.6	.7	.8	.7	.7	.8	.7	.7	.8	.8	.8	.8	.8
.8	.9	.8	.9	.9	.9	.9	.9	1.0	1.0	.9	.9	1.0	.9	.8	.8	.9	1.0	1.1	1.0	.9	.9	.9	.8	.8	1.0	.8	.9	.9	.9	.9	.9	.9	.9	.9	.8
.9	.9	.8	.8	.8	.8	.9	1.0	.9	.9	.8	.9	1.0	.9	.9	.9	1.0	.9	1.0	.8	.8	.9	.9	.8	.7	.9	.9	1.2	1.0	1.0	1.0	.9	1.0	.9	.9	.8
1.0	.9	.9	.8	.8	.8	.8	.9	.8	.9	.8	.7	.8	.8	.9	.8	1.0	.8	.8	.8	.7	.8	.8	.7	.8	.9	.9	1.1	.9	.9	.9	.8	.9	.9	1.0	.8
.9	.9	.8	.8	.7	.7	.8	.9	.9	1.0	.9	.9	.8	.8	.8	.7	.9	.8	.9	.8	.7	.8	.8	.8	.9	1.0	.9	1.1	.9	.8	.8	.8	.9	.9	.9	.8
.8	.8	.8	.8	.8	.8	.9	1.0	.9	1.0	.9	.9	.8	.8	.8	.7	.9	.8	.9	.8	.8	.8	.8	.8	.8	.7	.8	1.0	.9	.9	.9	.9	1.0	.9	.8	.7
.8	.8	.9	.9	.9	.9	.9	1.0	1.0	.9	.9	.9	.9	.9	.9	.8	.9	1.0	.9	.8	.9	.8	.8	.9	.8	.8	1.0	.9	.9	.9	1.0	1.0	1.0	.9	.7	.8
.8	.8	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.0	.9	1.0	1.0	1.0	1.1	1.0	1.0	1.1	.9	.9	.9	.9	.9	.9	.8	.8	1.1	.9	1.0	1.0	1.1	1.1	1.0	1.0	.9	.9
.9	.9	1.0	1.1	1.2	1.2	1.1	1.1	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	.9	.9	.9	.8	.8	.8	.7	.7	.9	.9	1.0	1.1	1.1	1.1	1.1	1.0	.9	.9
.9	1.0	1.1	1.2	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	.9	.8	.8	.8	.8	.8	.8	.7	.6	.5	.6	.6	.8	.9	1.0	1.0	1.0	.9	.9	.9
.9	.9	.9	.9	.9	.9	.9	.9	.9	.8	.8	.8	.8	.8	.8	.7	.6	.5	.5	.5	.5	.5	.5	.5	.5	.4	.4	.4	.4	.5	.6	.6	.7	.7	.7	.8
.9	.9	1.0	1.0	1.0	1.0	1.0	.9	.9	.9	.9	.9	.9	.9	.8	.7	.7	.6	.5	.5	.5	.4	.4	.4	.4	.4	.4	.5	.5	.6	.6	.7	.8	.8	.8	.9

Figure 39. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2001
Channel: AMSUA-9 (100 hPa)
NOAA15, using all observations

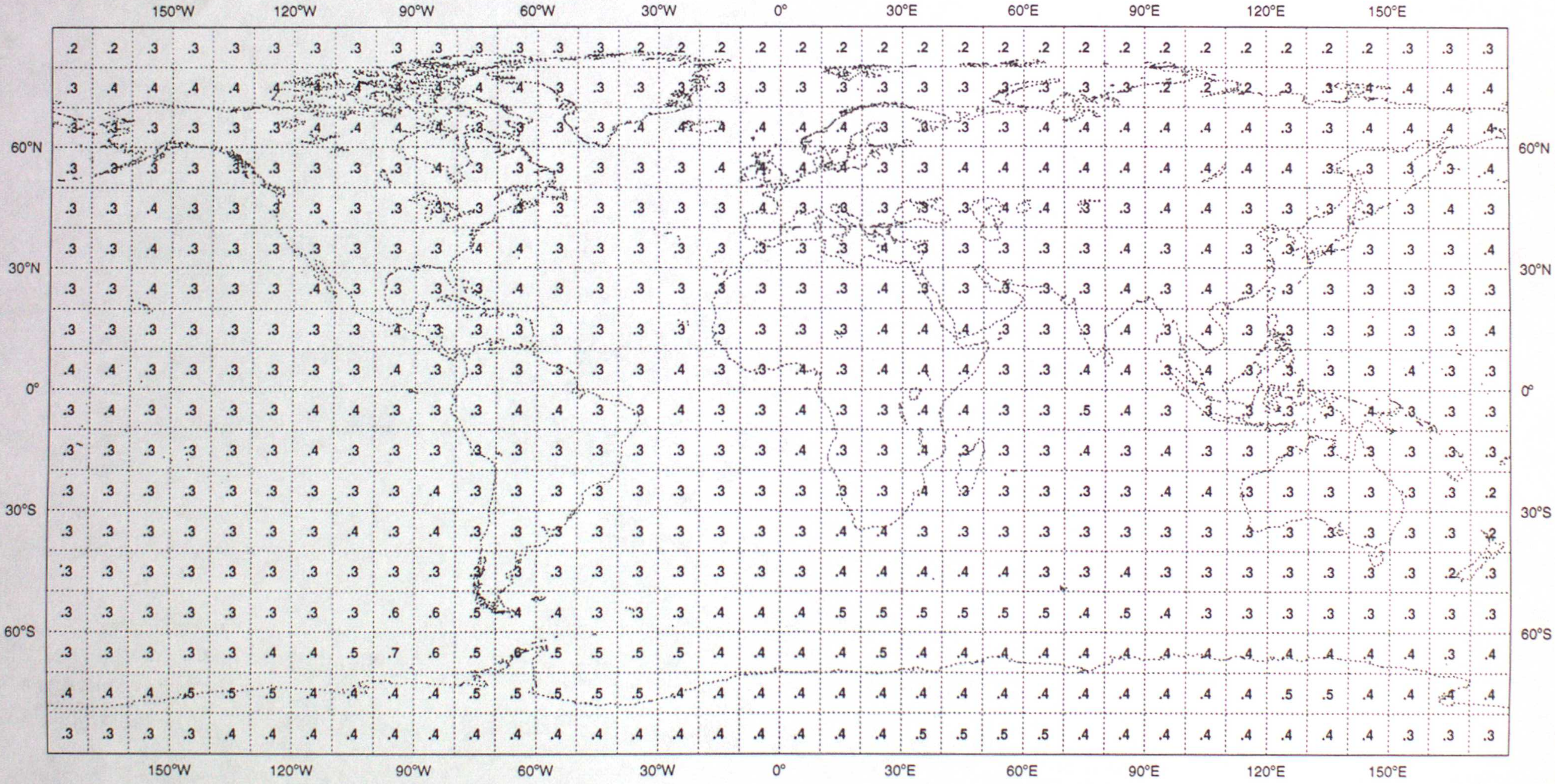
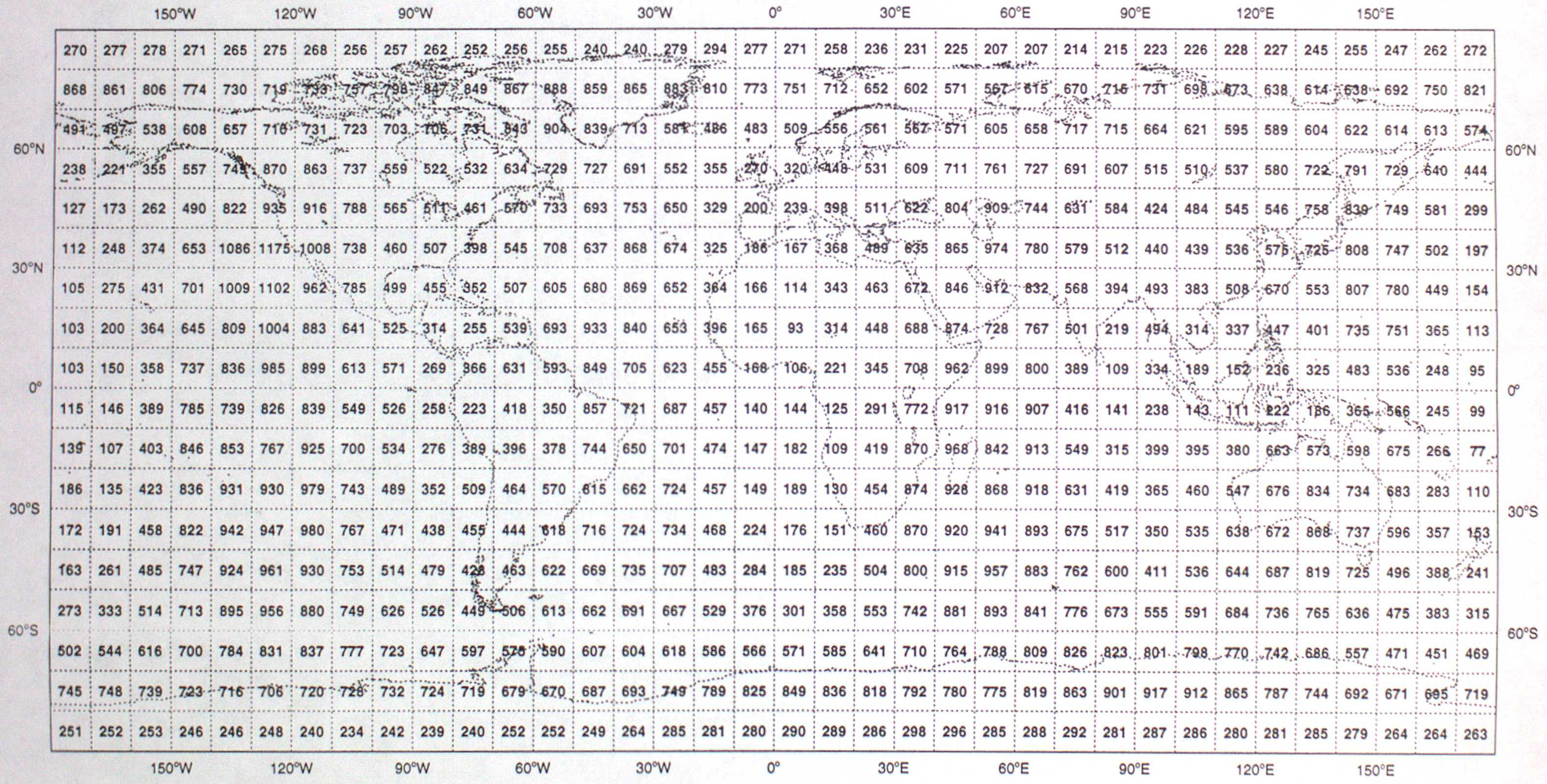

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
.2 .2 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .3 .3 .3
.3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .2 .2 .2 .3 .3 .4 .4 .4 .4
.3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .3 .3 .3 .3 .4 .4 .4 .4 .4 .4 .3 .3 .3 .3 .4 .4 .4 .4 .4 .4 .3 .3 .4 .4 .4 .4
.3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .3 .3 .4
.3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .4 .4 .3 .3 .4 .4 .3 .3 .3 .3 .3 .4 .3
.3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .4 .3 .4 .3 .3 .4 .3 .3 .3 .4
.3 .3 .4 .3 .3 .3 .4 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .4 .3 .4 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .3 .3 .3 .4 .3 .4 .3 .3 .3 .3 .3 .3 .4
.4 .4 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .4 .3 .3 .4 .3 .4 .4 .4 .3 .3 .4 .4 .3 .4 .3 .3 .3 .3 .4 .3 .3
.3 .4 .3 .3 .3 .3 .4 .4 .3 .3 .3 .4 .4 .3 .3 .4 .3 .3 .4 .3 .3 .4 .4 .3 .3 .5 .4 .3 .3 .3 .3 .3 .4 .3 .3 .3
.3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .4 .3 .3 .3 .4 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .4 .4 .3 .3 .3 .3 .3 .3 .2
.3 .3 .3 .3 .3 .3 .3 .4 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .2
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .4 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .2 .3
.3 .3 .3 .3 .3 .3 .3 .3 .6 .6 .5 .4 .4 .3 .3 .3 .4 .4 .4 .5 .5 .5 .5 .5 .5 .4 .5 .4 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .4 .4 .5 .7 .6 .5 .6 .5 .5 .5 .5 .4 .4 .4 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4
.4 .4 .4 .5 .5 .5 .4 .4 .4 .4 .5 .5 .5 .5 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .5 .4 .4 .4 .4
.3 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .5 .5 .5 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .3

Figure 40. ATOVS mean daily count. NOVEMBER 2001
NOAA16, using all observations
Global average number of observations in 24 hours = 358136

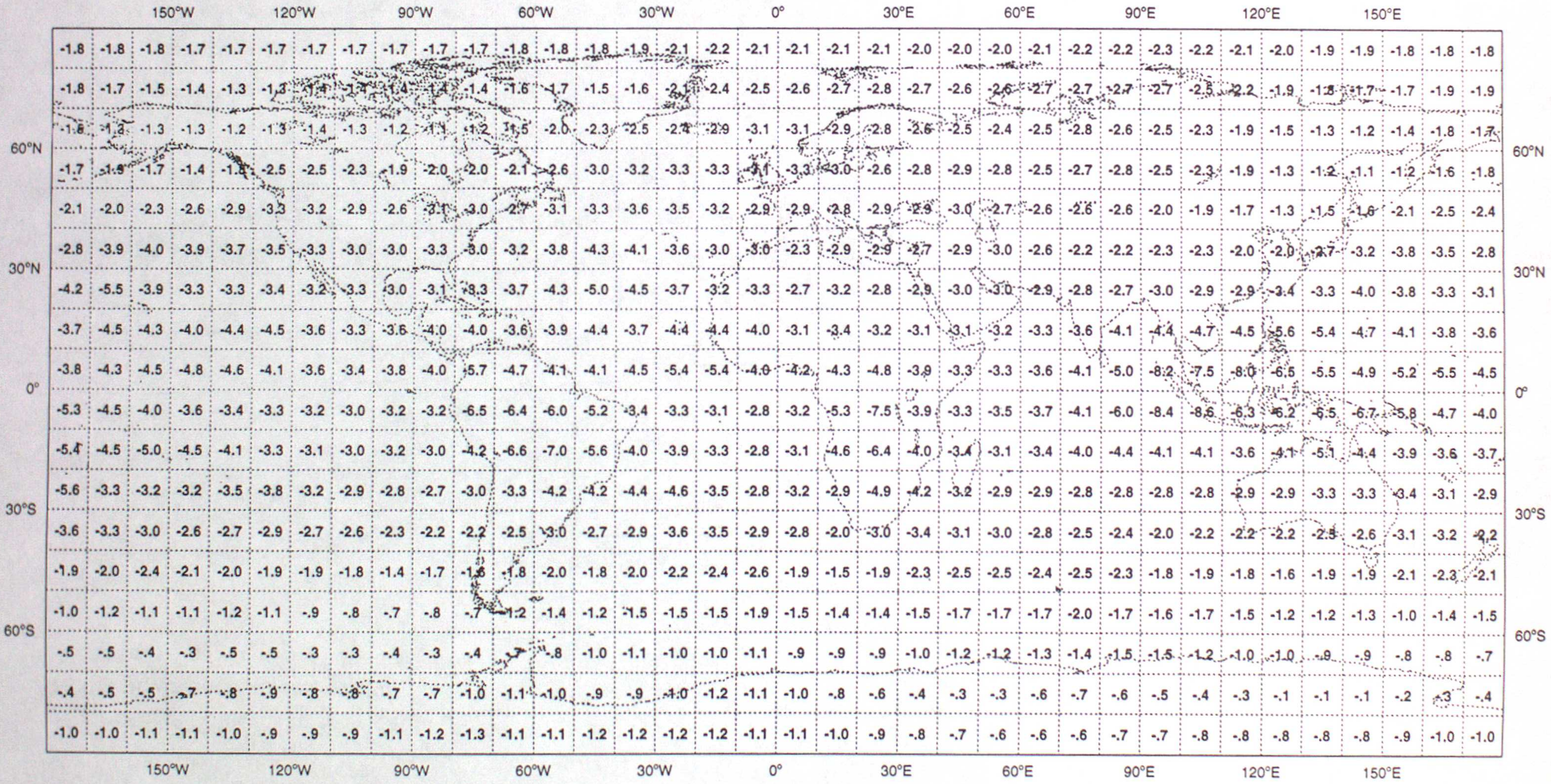


270	277	278	271	265	275	268	256	257	262	252	256	255	240	240	279	294	277	271	258	236	231	225	207	207	214	215	223	226	228	227	245	255	247	262	272
868	861	806	774	730	719	733	757	798	847	849	867	888	859	865	883	810	773	751	712	652	602	571	567	615	670	716	731	698	673	638	614	638	692	750	821
491	497	538	608	657	716	731	723	703	706	731	843	904	839	713	581	486	483	509	556	561	567	571	605	658	717	715	664	621	595	589	604	622	614	613	574
238	221	355	557	745	870	863	737	559	522	532	634	729	727	691	552	355	270	320	448	531	609	711	761	727	691	607	515	510	537	580	722	791	729	640	444
127	173	262	490	822	935	916	788	565	511	461	570	733	693	753	650	329	200	239	398	511	622	804	909	744	631	584	424	484	545	546	758	839	749	581	299
112	248	374	653	1086	1175	1008	738	460	507	398	545	708	637	868	674	325	186	167	368	489	635	865	974	780	579	512	440	439	536	575	725	808	747	502	197
105	275	431	701	1009	1102	962	785	499	455	352	507	605	680	869	652	364	166	114	343	463	672	846	912	832	568	394	493	383	508	670	553	807	780	449	154
103	200	364	645	809	1004	883	641	525	314	255	539	693	933	840	653	396	165	93	314	448	688	874	728	767	501	219	494	314	337	447	401	735	751	365	113
103	150	358	737	836	985	899	613	571	269	366	631	593	849	705	623	455	168	106	221	345	708	962	899	800	389	109	334	189	152	236	325	483	536	248	95
115	146	389	785	739	826	839	549	526	258	223	418	350	857	721	687	457	140	144	125	291	772	917	916	907	416	141	238	143	111	222	186	365	566	245	99
139	107	403	846	853	767	925	700	534	276	389	396	378	744	650	701	474	147	182	109	419	870	968	842	913	549	315	399	395	380	663	573	598	675	266	77
186	135	423	836	931	930	979	743	489	352	509	464	570	615	662	724	457	149	189	130	454	874	928	868	918	631	419	365	460	547	676	834	734	683	283	110
172	191	458	822	942	947	980	767	471	438	455	444	618	716	724	734	468	224	176	151	460	870	920	941	893	675	517	350	535	638	672	868	737	596	357	153
163	261	485	747	924	961	930	753	514	479	428	463	622	669	735	707	483	284	185	235	504	800	915	957	883	762	600	411	536	644	687	819	725	496	388	241
273	333	514	713	895	956	880	749	626	526	449	506	613	662	691	667	529	376	301	358	553	742	881	893	841	776	673	555	591	684	736	765	636	475	383	315
502	544	616	700	784	831	837	777	723	647	597	575	590	607	604	618	586	566	571	585	641	710	764	788	809	826	823	801	798	770	742	686	557	471	451	469
745	748	739	723	716	706	720	728	732	724	719	679	670	687	693	749	789	825	849	836	818	792	780	775	819	863	901	917	912	865	787	744	692	671	695	719
251	252	253	246	246	248	240	234	242	239	240	252	252	249	264	285	281	280	290	289	286	298	296	285	288	292	281	287	286	280	281	285	279	264	264	263

Figure 41. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2001

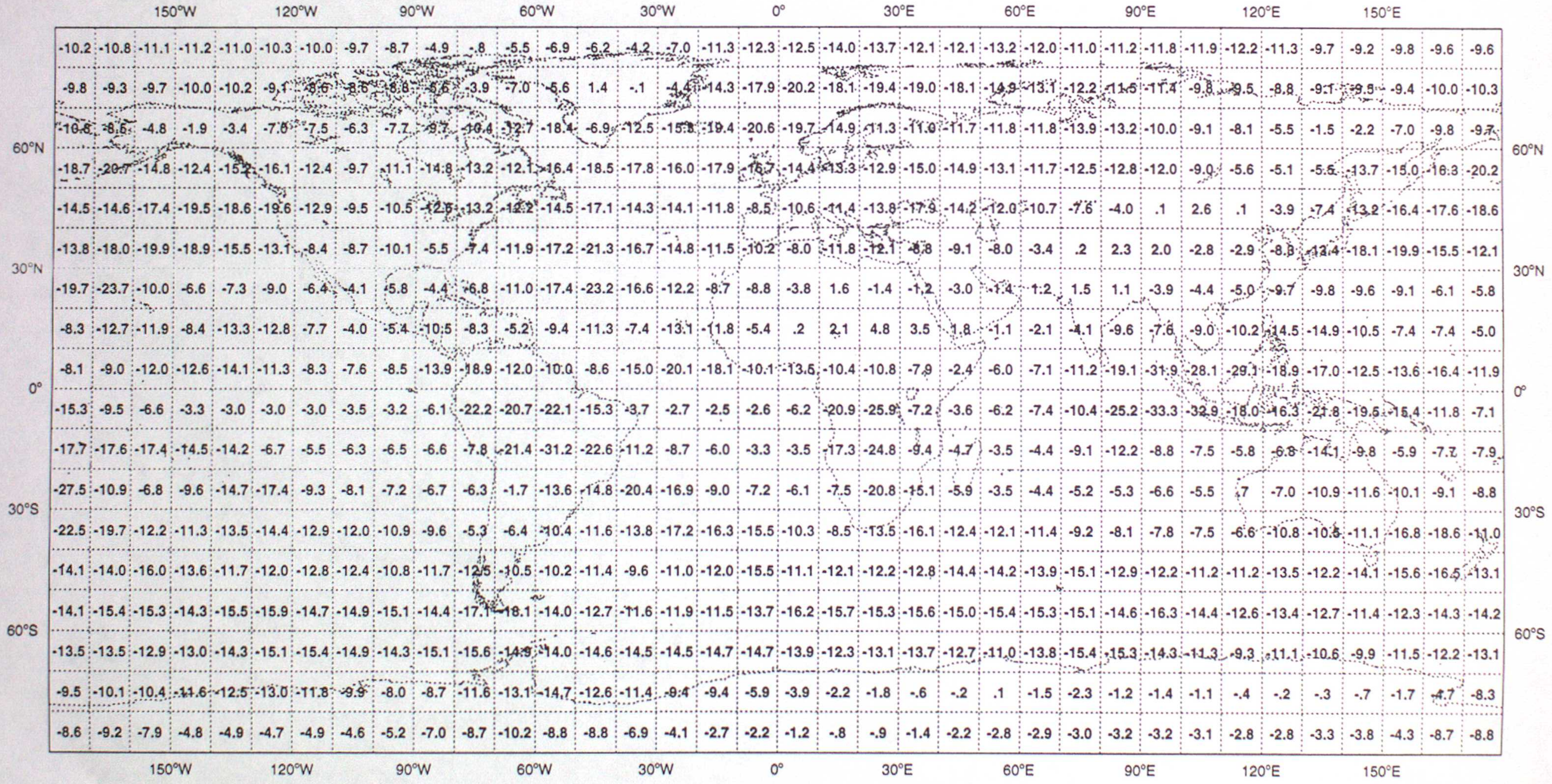
Channel: HIRS8 (Surface)

NOAA16, using all observations



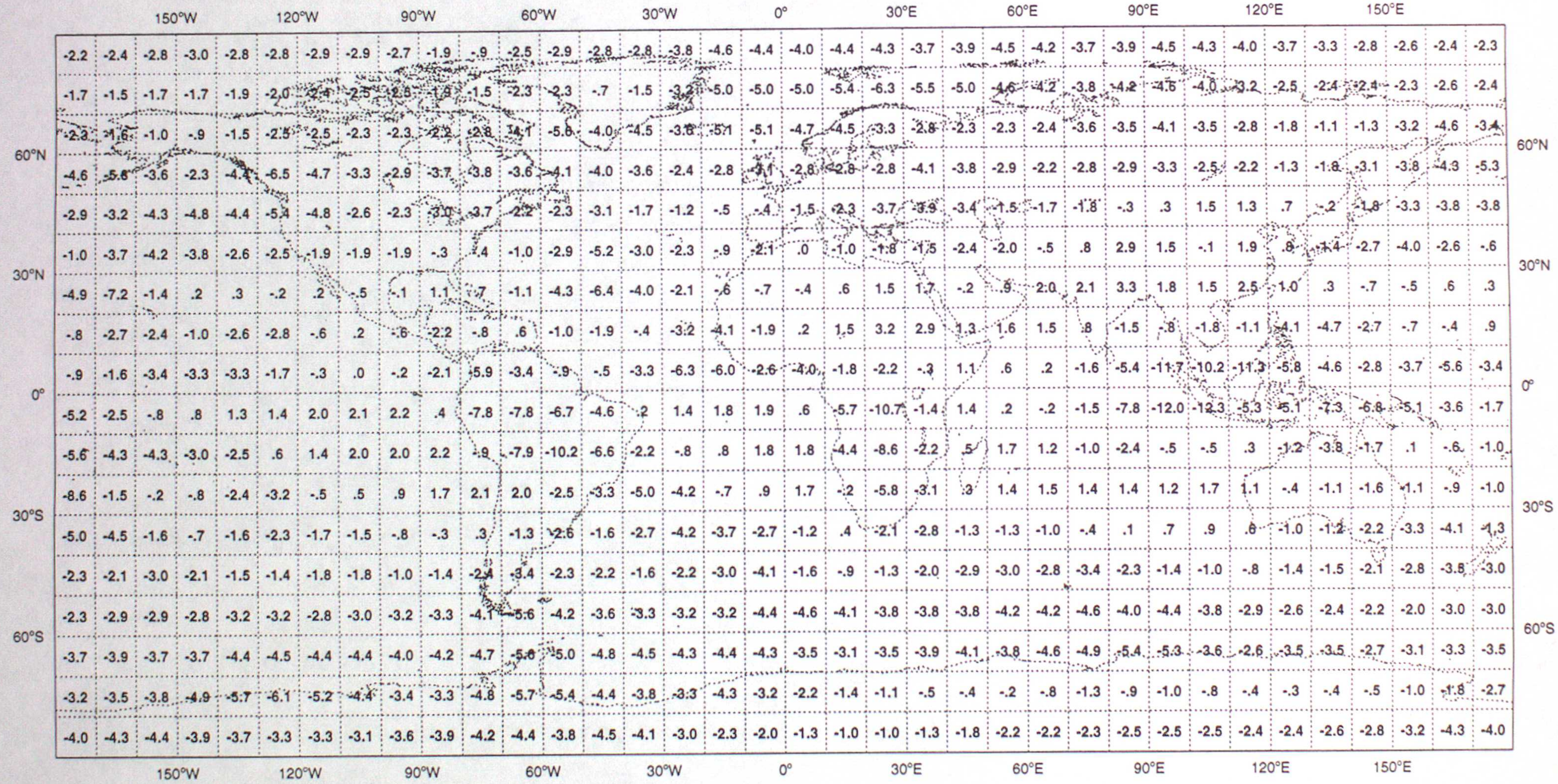
-1.8	-1.8	-1.8	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.8	-1.8	-1.8	-1.9	-2.1	-2.2	-2.1	-2.1	-2.1	-2.1	-2.0	-2.0	-2.0	-2.1	-2.2	-2.2	-2.3	-2.2	-2.1	-2.0	-1.9	-1.9	-1.8	-1.8	-1.8
-1.8	-1.7	-1.5	-1.4	-1.3	-1.3	-1.4	-1.4	-1.4	-1.4	-1.4	-1.6	-1.7	-1.5	-1.6	-2.1	-2.4	-2.5	-2.6	-2.7	-2.8	-2.7	-2.6	-2.6	-2.7	-2.7	-2.7	-2.7	-2.5	-2.2	-1.9	-1.8	-1.7	-1.7	-1.9	-1.9
-1.6	-1.3	-1.3	-1.3	-1.2	-1.3	-1.4	-1.3	-1.2	-1.1	-1.2	-1.5	-2.0	-2.3	-2.5	-2.4	-2.9	-3.1	-3.1	-2.9	-2.8	-2.6	-2.5	-2.4	-2.5	-2.8	-2.6	-2.5	-2.3	-1.9	-1.5	-1.3	-1.2	-1.4	-1.8	-1.7
-1.7	-1.9	-1.7	-1.4	-1.8	-2.5	-2.5	-2.3	-1.9	-2.0	-2.0	-2.1	-2.6	-3.0	-3.2	-3.3	-3.3	-3.1	-3.3	-3.0	-2.6	-2.8	-2.9	-2.8	-2.5	-2.7	-2.8	-2.5	-2.3	-1.9	-1.3	-1.2	-1.1	-1.2	-1.6	-1.8
-2.1	-2.0	-2.3	-2.6	-2.9	-3.3	-3.2	-2.9	-2.6	-3.1	-3.0	-2.7	-3.1	-3.3	-3.6	-3.5	-3.2	-2.9	-2.9	-2.8	-2.9	-2.9	-3.0	-2.7	-2.6	-2.6	-2.6	-2.0	-1.9	-1.7	-1.3	-1.5	-1.6	-2.1	-2.5	-2.4
-2.8	-3.9	-4.0	-3.9	-3.7	-3.5	-3.3	-3.0	-3.0	-3.3	-3.0	-3.2	-3.8	-4.3	-4.1	-3.6	-3.0	-3.0	-2.3	-2.9	-2.9	-2.7	-2.9	-3.0	-2.6	-2.2	-2.2	-2.3	-2.3	-2.0	-2.0	-2.7	-3.2	-3.8	-3.5	-2.8
-4.2	-5.5	-3.9	-3.3	-3.3	-3.4	-3.2	-3.3	-3.0	-3.1	-3.3	-3.7	-4.3	-5.0	-4.5	-3.7	-3.2	-3.3	-2.7	-3.2	-2.8	-2.9	-3.0	-3.0	-2.9	-2.8	-2.7	-3.0	-2.9	-2.9	-3.4	-3.3	-4.0	-3.8	-3.3	-3.1
-3.7	-4.5	-4.3	-4.0	-4.4	-4.5	-3.6	-3.3	-3.6	-4.0	-4.0	-3.6	-3.9	-4.4	-3.7	-4.4	-4.4	-4.0	-3.1	-3.4	-3.2	-3.1	-3.1	-3.2	-3.3	-3.6	-4.1	-4.4	-4.7	-4.5	-5.6	-5.4	-4.7	-4.1	-3.8	-3.6
-3.8	-4.3	-4.5	-4.8	-4.6	-4.1	-3.6	-3.4	-3.8	-4.0	-5.7	-4.7	-4.1	-4.1	-4.5	-5.4	-5.4	-4.0	-4.2	-4.3	-4.8	-3.9	-3.3	-3.3	-3.6	-4.1	-5.0	-8.2	-7.5	-8.0	-6.5	-5.5	-4.9	-5.2	-5.5	-4.5
-5.3	-4.5	-4.0	-3.6	-3.4	-3.3	-3.2	-3.0	-3.2	-3.2	-6.5	-6.4	-6.0	-5.2	-3.4	-3.3	-3.1	-2.8	-3.2	-5.3	-7.5	-3.9	-3.3	-3.5	-3.7	-4.1	-6.0	-8.4	-8.6	-6.3	-6.2	-6.5	-6.7	-5.8	-4.7	-4.0
-5.4	-4.5	-5.0	-4.5	-4.1	-3.3	-3.1	-3.0	-3.2	-3.0	-4.2	-6.6	-7.0	-5.6	-4.0	-3.9	-3.3	-2.8	-3.1	-4.6	-6.4	-4.0	-3.4	-3.1	-3.4	-4.0	-4.4	-4.1	-4.1	-3.6	-4.1	-5.1	-4.4	-3.9	-3.6	-3.7
-5.6	-3.3	-3.2	-3.2	-3.5	-3.8	-3.2	-2.9	-2.8	-2.7	-3.0	-3.3	-4.2	-4.2	-4.4	-4.6	-3.5	-2.8	-3.2	-2.9	-4.9	-4.2	-3.2	-2.9	-2.9	-2.8	-2.8	-2.8	-2.8	-2.9	-2.9	-3.3	-3.3	-3.4	-3.1	-2.9
-3.6	-3.3	-3.0	-2.6	-2.7	-2.9	-2.7	-2.6	-2.3	-2.2	-2.2	-2.5	-3.0	-2.7	-2.9	-3.6	-3.5	-2.9	-2.8	-2.0	-3.0	-3.4	-3.1	-3.0	-2.8	-2.5	-2.4	-2.0	-2.2	-2.2	-2.2	-2.5	-2.6	-3.1	-3.2	-2.2
-1.9	-2.0	-2.4	-2.1	-2.0	-1.9	-1.9	-1.8	-1.4	-1.7	-1.6	-1.8	-2.0	-1.8	-2.0	-2.2	-2.4	-2.6	-1.9	-1.5	-1.9	-2.3	-2.5	-2.5	-2.4	-2.5	-2.3	-1.8	-1.9	-1.8	-1.6	-1.9	-1.9	-2.1	-2.3	-2.1
-1.0	-1.2	-1.1	-1.1	-1.2	-1.1	-.9	-.8	-.7	-.8	-.7	-1.2	-1.4	-1.2	-1.5	-1.5	-1.5	-1.9	-1.5	-1.4	-1.4	-1.5	-1.7	-1.7	-1.7	-2.0	-1.7	-1.6	-1.7	-1.5	-1.2	-1.2	-1.3	-1.0	-1.4	-1.5
-.5	-.5	-.4	-.3	-.5	-.5	-.3	-.3	-.4	-.3	-.4	-.7	-.8	-1.0	-1.1	-1.0	-1.0	-1.1	-.9	-.9	-.9	-1.0	-1.2	-1.2	-1.3	-1.4	-1.5	-1.5	-1.2	-1.0	-1.0	-.9	-.9	-.8	-.8	-.7
-.4	-.5	-.5	-.7	-.8	-.9	-.8	-.8	-.7	-.7	-1.0	-1.1	-1.0	-.9	-.9	-1.0	-1.2	-1.1	-1.0	-.8	-.6	-.4	-.3	-.3	-.6	-.7	-.6	-.5	-.4	-.3	-.1	-.1	-.1	-.2	-.3	-.4
-1.0	-1.0	-1.1	-1.1	-1.0	-.9	-.9	-.9	-1.1	-1.2	-1.3	-1.1	-1.1	-1.2	-1.2	-1.2	-1.2	-1.1	-1.1	-1.0	-.9	-.8	-.7	-.6	-.6	-.6	-.7	-.7	-.8	-.8	-.8	-.8	-.8	-.9	-1.0	-1.0

Figure 42. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2001
Channel: HIRS8 (Surface)
NOAA16, using all observations



-10.2	-10.8	-11.1	-11.2	-11.0	-10.3	-10.0	-9.7	-8.7	-4.9	-.8	-5.5	-6.9	-6.2	-4.2	-7.0	-11.3	-12.3	-12.5	-14.0	-13.7	-12.1	-12.1	-13.2	-12.0	-11.0	-11.2	-11.8	-11.9	-12.2	-11.3	-9.7	-9.2	-9.8	-9.6	-9.6
-9.8	-9.3	-9.7	-10.0	-10.2	-9.1	-8.6	-8.6	-8.8	-5.6	-3.9	-7.0	-5.6	1.4	-.1	-4.4	-14.3	-17.9	-20.2	-18.1	-19.4	-19.0	-18.1	-14.9	-13.1	-12.2	-11.5	-11.4	-9.8	-9.5	-8.8	-9.1	-9.5	-9.4	-10.0	-10.3
-10.8	-8.5	-4.8	-1.9	-3.4	-7.6	-7.5	-6.3	-7.7	-9.7	-10.4	-12.7	-18.4	-6.9	-12.5	-15.8	-19.4	-20.6	-19.7	-14.9	-11.3	-11.0	-11.7	-11.8	-11.8	-13.9	-13.2	-10.0	-9.1	-8.1	-5.5	-1.5	-2.2	-7.0	-9.8	-9.7
-18.7	-20.7	-14.8	-12.4	-15.2	-16.1	-12.4	-9.7	-11.1	-14.8	-13.2	-12.1	-16.4	-18.5	-17.8	-16.0	-17.9	-16.7	-14.4	-13.3	-12.9	-15.0	-14.9	-13.1	-11.7	-12.5	-12.8	-12.0	-9.0	-5.6	-5.1	-5.5	-13.7	-15.0	-16.3	-20.2
-14.5	-14.6	-17.4	-19.5	-18.6	-19.6	-12.9	-9.5	-10.5	-12.5	-13.2	-12.2	-14.5	-17.1	-14.3	-14.1	-11.8	-8.5	-10.6	-11.4	-13.8	-17.9	-14.2	-12.0	-10.7	-7.6	-4.0	.1	2.6	.1	-3.9	-7.4	-13.2	-16.4	-17.6	-18.6
-13.8	-18.0	-19.9	-18.9	-15.5	-13.1	-8.4	-8.7	-10.1	-5.5	-7.4	-11.9	-17.2	-21.3	-16.7	-14.8	-11.5	-10.2	-8.0	-11.8	-12.1	-8.8	-9.1	-8.0	-3.4	.2	2.3	2.0	-2.8	-2.9	-8.8	-13.4	-18.1	-19.9	-15.5	-12.1
-19.7	-23.7	-10.0	-6.6	-7.3	-9.0	-6.4	-4.1	-5.8	-4.4	-6.8	-11.0	-17.4	-23.2	-16.6	-12.2	-8.7	-8.8	-3.8	1.6	-1.4	-1.2	-3.0	-1.4	1.2	1.5	1.1	-3.9	-4.4	-5.0	-9.7	-9.8	-9.6	-9.1	-6.1	-5.8
-8.3	-12.7	-11.9	-8.4	-13.3	-12.8	-7.7	-4.0	-5.4	-10.5	-8.3	-5.2	-9.4	-11.3	-7.4	-13.1	-11.8	-5.4	.2	2.1	4.8	3.5	1.8	-1.1	-2.1	-4.1	-9.6	-7.6	-9.0	-10.2	-14.5	-14.9	-10.5	-7.4	-7.4	-5.0
-8.1	-9.0	-12.0	-12.6	-14.1	-11.3	-8.3	-7.6	-8.5	-13.9	-18.9	-12.0	-10.0	-8.6	-15.0	-20.1	-18.1	-10.1	-13.6	-10.4	-10.8	-7.9	-2.4	-6.0	-7.1	-11.2	-19.1	-31.9	-28.1	-29.1	-18.9	-17.0	-12.5	-13.6	-16.4	-11.9
-15.3	-9.5	-6.6	-3.3	-3.0	-3.0	-3.0	-3.5	-3.2	-6.1	-22.2	-20.7	-22.1	-15.3	-3.7	-2.7	-2.5	-2.6	-6.2	-20.9	-25.9	-7.2	-3.6	-6.2	-7.4	-10.4	-25.2	-33.3	-32.9	-18.0	-16.3	-21.8	-19.6	-15.4	-11.8	-7.1
-17.7	-17.6	-17.4	-14.5	-14.2	-6.7	-5.5	-6.3	-6.5	-6.6	-7.8	-21.4	-31.2	-22.6	-11.2	-8.7	-6.0	-3.3	-3.5	-17.3	-24.8	-9.4	-4.7	-3.5	-4.4	-9.1	-12.2	-8.8	-7.5	-5.8	-6.8	-14.1	-9.8	-5.9	-7.7	-7.9
-27.5	-10.9	-6.8	-9.6	-14.7	-17.4	-9.3	-8.1	-7.2	-6.7	-6.3	-1.7	-13.6	-14.8	-20.4	-16.9	-9.0	-7.2	-6.1	-7.5	-20.8	-15.1	-5.9	-3.5	-4.4	-5.2	-5.3	-6.6	-5.5	.7	-7.0	-10.9	-11.6	-10.1	-9.1	-8.8
-22.5	-19.7	-12.2	-11.3	-13.5	-14.4	-12.9	-12.0	-10.9	-9.6	-5.3	-6.4	-10.4	-11.6	-13.8	-17.2	-16.3	-15.5	-10.3	-8.5	-13.5	-16.1	-12.4	-12.1	-11.4	-9.2	-8.1	-7.8	-7.5	-6.6	-10.8	-10.8	-11.1	-16.8	-18.6	-11.0
-14.1	-14.0	-16.0	-13.6	-11.7	-12.0	-12.8	-12.4	-10.8	-11.7	-12.5	-10.5	-10.2	-11.4	-9.6	-11.0	-12.0	-15.5	-11.1	-12.1	-12.2	-12.8	-14.4	-14.2	-13.9	-15.1	-12.9	-12.2	-11.2	-11.2	-13.5	-12.2	-14.1	-15.6	-16.5	-13.1
-14.1	-15.4	-15.3	-14.3	-15.5	-15.9	-14.7	-14.9	-15.1	-14.4	-17.1	-18.1	-14.0	-12.7	-11.6	-11.9	-11.5	-13.7	-16.2	-15.7	-15.3	-15.6	-15.0	-15.4	-15.3	-15.1	-14.6	-16.3	-14.4	-12.6	-13.4	-12.7	-11.4	-12.3	-14.3	-14.2
-13.5	-13.5	-12.9	-13.0	-14.3	-15.1	-15.4	-14.9	-14.3	-15.1	-15.6	-14.9	-14.0	-14.6	-14.5	-14.5	-14.7	-14.7	-13.9	-12.3	-13.1	-13.7	-12.7	-11.0	-13.8	-15.4	-15.3	-14.3	-11.3	-9.3	-11.1	-10.6	-9.9	-11.5	-12.2	-13.1
-9.5	-10.1	-10.4	-11.6	-12.5	-13.0	-11.8	-9.9	-8.0	-8.7	-11.6	-13.1	-14.7	-12.6	-11.4	-9.4	-9.4	-5.9	-3.9	-2.2	-1.8	-.6	-.2	.1	-1.5	-2.3	-1.2	-1.4	-1.1	-.4	-.2	-.3	-.7	-1.7	-4.7	-8.3
-8.6	-9.2	-7.9	-4.8	-4.9	-4.7	-4.9	-4.6	-5.2	-7.0	-8.7	-10.2	-8.8	-8.8	-6.9	-4.1	-2.7	-2.2	-1.2	-.8	-.9	-1.4	-2.2	-2.8	-2.9	-3.0	-3.2	-3.2	-3.1	-2.8	-2.8	-3.3	-3.8	-4.3	-8.7	-8.8

Figure 43. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2001
Channel: HIRS15 (700 hPa)
NOAA16, using all observations

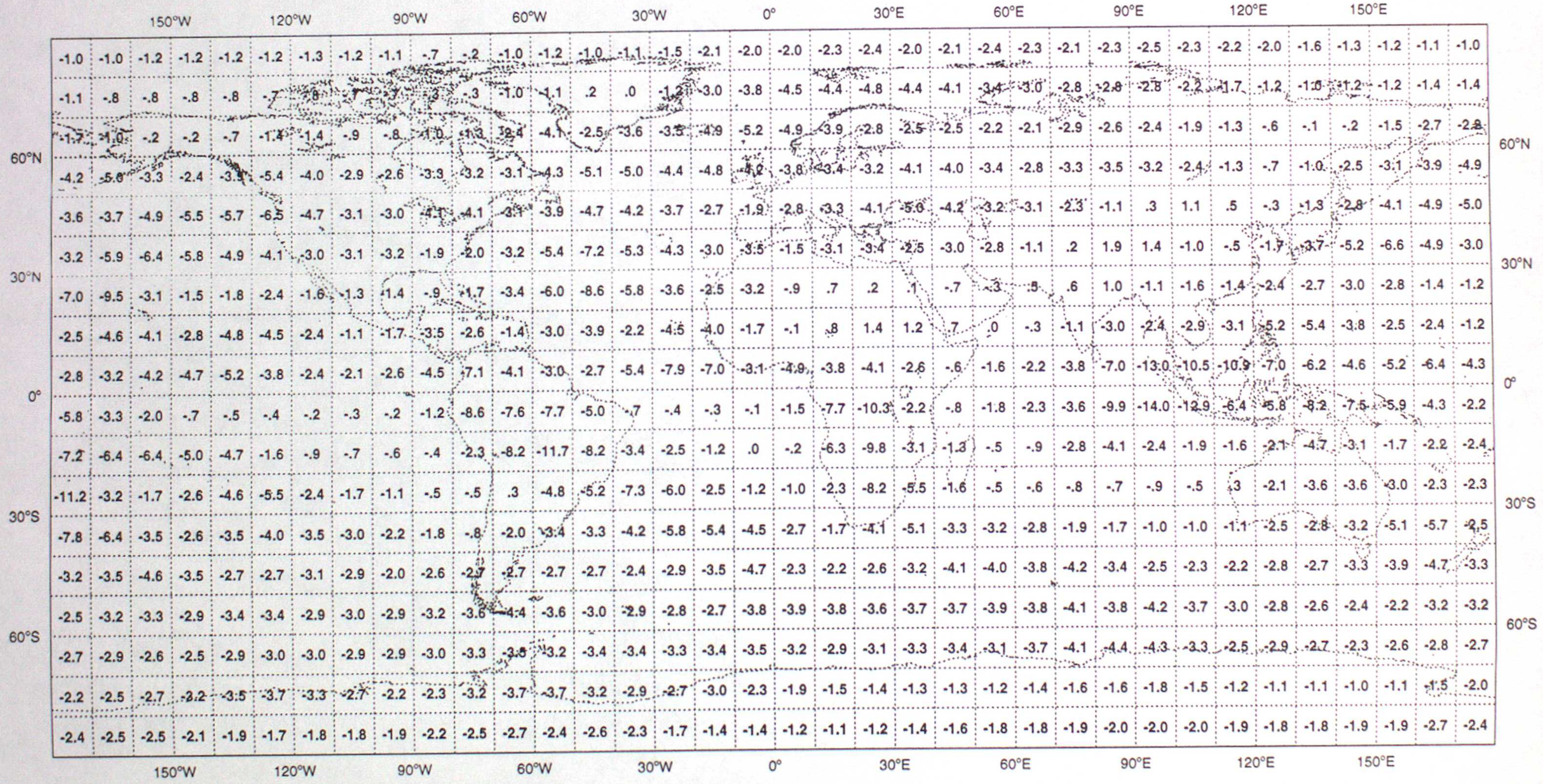


-2.2	-2.4	-2.8	-3.0	-2.8	-2.8	-2.9	-2.9	-2.7	-1.9	-.9	-2.5	-2.9	-2.8	-2.8	-3.8	-4.6	-4.4	-4.0	-4.4	-4.3	-3.7	-3.9	-4.5	-4.2	-3.7	-3.9	-4.5	-4.3	-4.0	-3.7	-3.3	-2.8	-2.6	-2.4	-2.3
-1.7	-1.5	-1.7	-1.7	-1.9	-2.0	-2.4	-2.5	-2.8	-1.9	-1.5	-2.3	-2.3	-.7	-1.5	-3.2	-5.0	-5.0	-5.0	-5.4	-6.3	-5.5	-5.0	-4.6	-4.2	-3.8	-4.2	-4.6	-4.0	-3.2	-2.5	-2.4	-2.4	-2.3	-2.6	-2.4
-2.3	-1.6	-1.0	-.9	-1.5	-2.5	-2.5	-2.3	-2.3	-2.2	-2.8	-4.1	-5.6	-4.0	-4.5	-3.6	-5.1	-5.1	-4.7	-4.5	-3.3	-2.8	-2.3	-2.3	-2.4	-3.6	-3.5	-4.1	-3.5	-2.8	-1.8	-1.1	-1.3	-3.2	-4.6	-3.4
-4.6	-5.8	-3.6	-2.3	-4.4	-6.5	-4.7	-3.3	-2.9	-3.7	-3.8	-3.6	-4.1	-4.0	-3.6	-2.4	-2.8	-3.1	-2.8	-2.8	-2.8	-4.1	-3.8	-2.9	-2.2	-2.8	-2.9	-3.3	-2.5	-2.2	-1.3	-1.8	-3.1	-3.8	-4.3	-5.3
-2.9	-3.2	-4.3	-4.8	-4.4	-5.4	-4.8	-2.6	-2.3	-3.0	-3.7	-2.2	-2.3	-3.1	-1.7	-1.2	-.5	-.4	-1.5	-2.3	-3.7	-3.9	-3.4	-1.5	-1.7	-1.8	-.3	.3	1.5	1.3	.7	-.2	-1.8	-3.3	-3.8	-3.8
-1.0	-3.7	-4.2	-3.8	-2.6	-2.5	-1.9	-1.9	-1.9	-.3	.4	-1.0	-2.9	-5.2	-3.0	-2.3	-.9	-2.1	.0	-1.0	-1.8	-1.5	-2.4	-2.0	-.5	.8	2.9	1.5	-.1	1.9	.8	-1.4	-2.7	-4.0	-2.6	-.6
-4.9	-7.2	-1.4	.2	.3	-.2	.2	-.5	-.1	1.1	.7	-1.1	-4.3	-6.4	-4.0	-2.1	-.6	-.7	-.4	.6	1.5	1.7	-.2	.9	2.0	2.1	3.3	1.8	1.5	2.5	-1.0	.3	-.7	-.5	.6	.3
-.8	-2.7	-2.4	-1.0	-2.6	-2.8	-.6	.2	-.6	-2.2	-.8	.6	-1.0	-1.9	-.4	-3.2	-4.1	-1.9	.2	1.5	3.2	2.9	1.3	1.6	1.5	.8	-1.5	-.8	-1.8	-1.1	-4.1	-4.7	-2.7	-.7	-.4	.9
-.9	-1.6	-3.4	-3.3	-3.3	-1.7	-.3	.0	-.2	-2.1	-5.9	-3.4	-.9	-.5	-3.3	-6.3	-6.0	-2.6	-4.0	-1.8	-2.2	-.3	1.1	.6	.2	-1.6	-5.4	-11.7	-10.2	-11.3	-5.8	-4.6	-2.8	-3.7	-5.6	-3.4
-5.2	-2.5	-.8	.8	1.3	1.4	2.0	2.1	2.2	.4	-7.8	-7.8	-6.7	-4.6	.2	1.4	1.8	1.9	.6	-5.7	-10.7	-1.4	1.4	.2	-.2	-1.5	-7.8	-12.0	-12.3	-5.3	-5.1	-7.3	-6.8	-5.1	-3.6	-1.7
-5.6	-4.3	-4.3	-3.0	-2.5	.6	1.4	2.0	2.0	2.2	-.9	-7.9	-10.2	-6.6	-2.2	-.8	.8	1.8	1.8	-4.4	-8.6	-2.2	.5	1.7	1.2	-1.0	-2.4	-.5	-.5	.3	-1.2	-3.8	-1.7	.1	-.6	-1.0
-8.6	-1.5	-.2	-.8	-2.4	-3.2	-.5	.5	.9	1.7	2.1	2.0	-2.5	-3.3	-5.0	-4.2	-.7	.9	1.7	-.2	-5.8	-3.1	.3	1.4	1.5	1.4	1.4	1.2	1.7	1.1	-.4	-1.1	-1.6	-1.1	-.9	-1.0
-5.0	-4.5	-1.6	-.7	-1.6	-2.3	-1.7	-1.5	-.8	-.3	.3	-1.3	-2.6	-1.6	-2.7	-4.2	-3.7	-2.7	-1.2	.4	-2.1	-2.8	-1.3	-1.3	-1.0	-.4	.1	.7	.9	.6	-1.0	-1.2	-2.2	-3.3	-4.1	-1.3
-2.3	-2.1	-3.0	-2.1	-1.5	-1.4	-1.8	-1.8	-1.0	-1.4	-2.4	-3.4	-2.3	-2.2	-1.6	-2.2	-3.0	-4.1	-1.6	-.9	-1.3	-2.0	-2.9	-3.0	-2.8	-3.4	-2.3	-1.4	-1.0	-.8	-1.4	-1.5	-2.1	-2.8	-3.8	-3.0
-2.3	-2.9	-2.9	-2.8	-3.2	-3.2	-2.8	-3.0	-3.2	-3.3	-4.1	-5.6	-4.2	-3.6	-3.3	-3.2	-3.2	-4.4	-4.6	-4.1	-3.8	-3.8	-3.8	-4.2	-4.2	-4.6	-4.0	-4.4	-3.8	-2.9	-2.6	-2.4	-2.2	-2.0	-3.0	-3.0
-3.7	-3.9	-3.7	-3.7	-4.4	-4.5	-4.4	-4.4	-4.0	-4.2	-4.7	-5.6	-5.0	-4.8	-4.5	-4.3	-4.4	-4.3	-3.5	-3.1	-3.5	-3.9	-4.1	-3.8	-4.6	-4.9	-5.4	-5.3	-3.6	-2.6	-3.5	-3.5	-2.7	-3.1	-3.3	-3.5
-3.2	-3.5	-3.8	-4.9	-5.7	-6.1	-5.2	-4.4	-3.4	-3.3	-4.8	-5.7	-5.4	-4.4	-3.8	-3.3	-4.3	-3.2	-2.2	-1.4	-1.1	-.5	-.4	-.2	-.8	-1.3	-.9	-1.0	-.8	-.4	-.3	-.4	-.5	-1.0	-1.8	-2.7
-4.0	-4.3	-4.4	-3.9	-3.7	-3.3	-3.3	-3.1	-3.6	-3.9	-4.2	-4.4	-3.8	-4.5	-4.1	-3.0	-2.3	-2.0	-1.3	-1.0	-1.0	-1.3	-1.8	-2.2	-2.2	-2.3	-2.5	-2.5	-2.5	-2.4	-2.4	-2.6	-2.8	-3.2	-4.3	-4.0

Figure 44. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2001

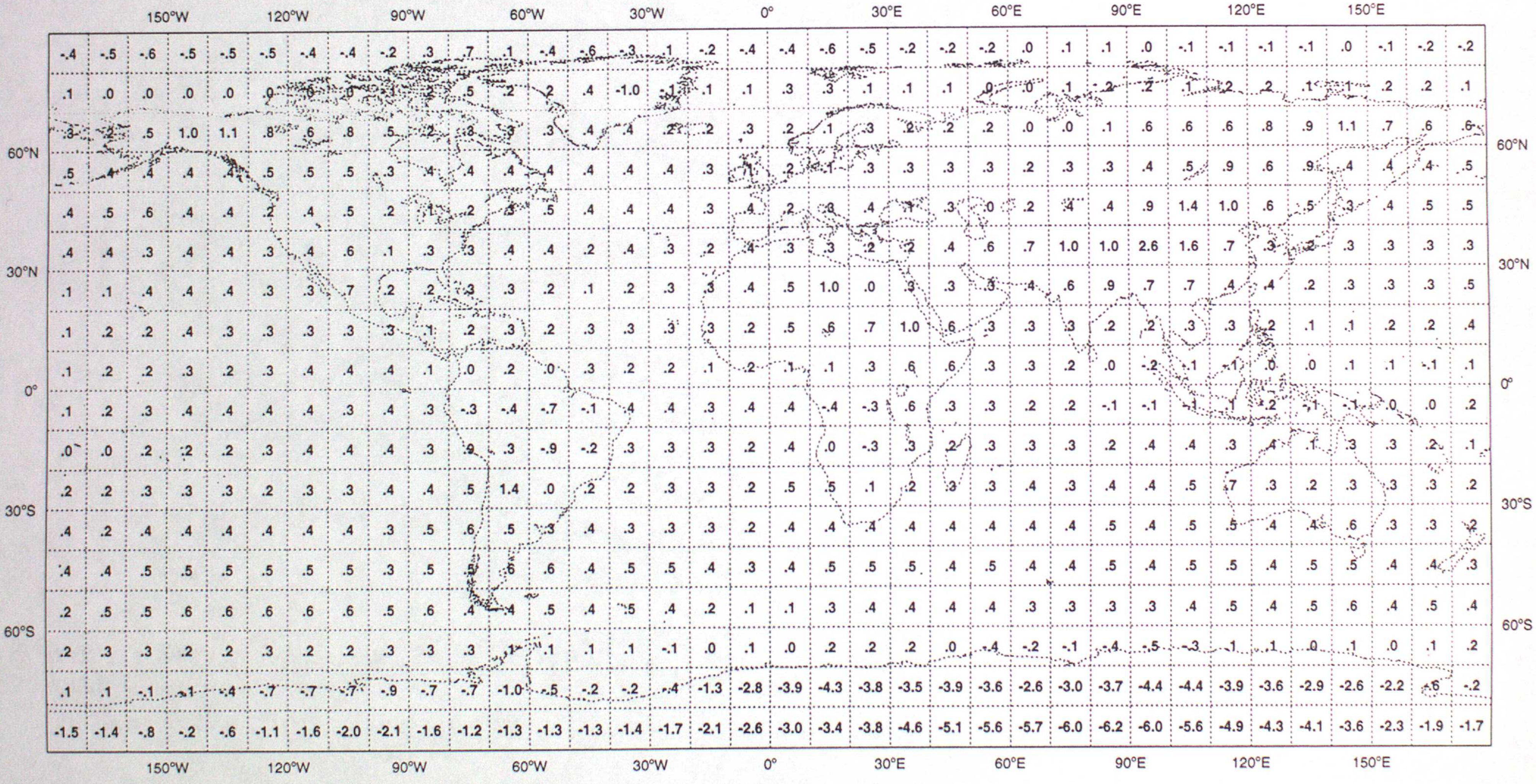
Channel: HIRS15 (700 hPa)

NOAA16, using all observations



-1.0	-1.0	-1.2	-1.2	-1.2	-1.2	-1.3	-1.2	-1.1	-.7	-.2	-1.0	-1.2	-1.0	-1.1	-1.5	-2.1	-2.0	-2.0	-2.3	-2.4	-2.0	-2.1	-2.4	-2.3	-2.1	-2.3	-2.5	-2.3	-2.2	-2.0	-1.6	-1.3	-1.2	-1.1	-1.0
-1.1	-.8	-.8	-.8	-.8	-.7	-.8	-.7	-.7	-.3	-.3	-1.0	-1.1	.2	.0	-1.2	-3.0	-3.8	-4.5	-4.4	-4.8	-4.4	-4.1	-3.4	-3.0	-2.8	-2.8	-2.8	-2.2	-1.7	-1.2	-1.0	-1.2	-1.2	-1.4	-1.4
-1.7	-1.0	-.2	-.2	-.7	-1.4	-1.4	-.9	-.8	-1.0	-1.3	-2.4	-4.1	-2.5	-3.6	-3.5	-4.9	-5.2	-4.9	-3.9	-2.8	-2.5	-2.5	-2.2	-2.1	-2.9	-2.6	-2.4	-1.9	-1.3	-.6	-.1	-.2	-1.5	-2.7	-2.8
-4.2	-5.6	-3.3	-2.4	-3.5	-5.4	-4.0	-2.9	-2.6	-3.3	-3.2	-3.1	-4.3	-5.1	-5.0	-4.4	-4.8	-4.2	-3.8	-3.4	-3.2	-4.1	-4.0	-3.4	-2.8	-3.3	-3.5	-3.2	-2.4	-1.3	-.7	-1.0	-2.5	-3.1	-3.9	-4.9
-3.6	-3.7	-4.9	-5.5	-5.7	-6.5	-4.7	-3.1	-3.0	-4.1	-4.1	-3.1	-3.9	-4.7	-4.2	-3.7	-2.7	-1.9	-2.8	-3.3	-4.1	-5.0	-4.2	-3.2	-3.1	-2.3	-1.1	.3	1.1	.5	-.3	-1.3	-2.8	-4.1	-4.9	-5.0
-3.2	-5.9	-6.4	-5.8	-4.9	-4.1	-3.0	-3.1	-3.2	-1.9	-2.0	-3.2	-5.4	-7.2	-5.3	-4.3	-3.0	-3.5	-1.5	-3.1	-3.4	-2.5	-3.0	-2.8	-1.1	.2	1.9	1.4	-1.0	-.5	-1.7	-3.7	-5.2	-6.6	-4.9	-3.0
-7.0	-9.5	-3.1	-1.5	-1.8	-2.4	-1.6	-1.3	-1.4	-.9	-1.7	-3.4	-6.0	-8.6	-5.8	-3.6	-2.5	-3.2	-.9	.7	.2	.1	-.7	-.3	.5	.6	1.0	-1.1	-1.6	-1.4	-2.4	-2.7	-3.0	-2.8	-1.4	-1.2
-2.5	-4.6	-4.1	-2.8	-4.8	-4.5	-2.4	-1.1	-1.7	-3.5	-2.6	-1.4	-3.0	-3.9	-2.2	-4.5	-4.0	-1.7	-.1	.8	1.4	1.2	.7	.0	-.3	-1.1	-3.0	-2.4	-2.9	-3.1	-5.2	-5.4	-3.8	-2.5	-2.4	-1.2
-2.8	-3.2	-4.2	-4.7	-5.2	-3.8	-2.4	-2.1	-2.6	-4.5	-7.1	-4.1	-3.0	-2.7	-5.4	-7.9	-7.0	-3.1	-4.9	-3.8	-4.1	-2.6	-.6	-1.6	-2.2	-3.8	-7.0	-13.0	-10.5	-10.9	-7.0	-6.2	-4.6	-5.2	-6.4	-4.3
-5.8	-3.3	-2.0	-.7	-.5	-.4	-.2	-.3	-.2	-1.2	-8.6	-7.6	-7.7	-5.0	-.7	-.4	-.3	-.1	-1.5	-7.7	-10.3	-2.2	-.8	-1.8	-2.3	-3.6	-9.9	-14.0	-12.9	-6.4	-5.8	-8.2	-7.5	-5.9	-4.3	-2.2
-7.2	-6.4	-6.4	-5.0	-4.7	-1.6	-.9	-.7	-.6	-.4	-2.3	-8.2	-11.7	-8.2	-3.4	-2.5	-1.2	.0	-.2	-6.3	-9.8	-3.1	-1.3	-.5	-.9	-2.8	-4.1	-2.4	-1.9	-1.6	-2.1	-4.7	-3.1	-1.7	-2.2	-2.4
-11.2	-3.2	-1.7	-2.6	-4.6	-5.5	-2.4	-1.7	-1.1	-.5	-.5	.3	-4.8	-5.2	-7.3	-6.0	-2.5	-1.2	-1.0	-2.3	-8.2	-5.5	-1.6	-.5	-.6	-.8	-.7	-.9	-.5	.3	-2.1	-3.6	-3.6	-3.0	-2.3	-2.3
-7.8	-6.4	-3.5	-2.6	-3.5	-4.0	-3.5	-3.0	-2.2	-1.8	-.8	-2.0	-3.4	-3.3	-4.2	-5.8	-5.4	-4.5	-2.7	-1.7	-4.1	-5.1	-3.3	-3.2	-2.8	-1.9	-1.7	-1.0	-1.0	-1.1	-2.5	-2.8	-3.2	-5.1	-5.7	-2.5
-3.2	-3.5	-4.6	-3.5	-2.7	-2.7	-3.1	-2.9	-2.0	-2.6	-2.7	-2.7	-2.7	-2.7	-2.4	-2.9	-3.5	-4.7	-2.3	-2.2	-2.6	-3.2	-4.1	-4.0	-3.8	-4.2	-3.4	-2.5	-2.3	-2.2	-2.8	-2.7	-3.3	-3.9	-4.7	-3.3
-2.5	-3.2	-3.3	-2.9	-3.4	-3.4	-2.9	-3.0	-2.9	-3.2	-3.6	-4.4	-3.6	-3.0	-2.9	-2.8	-2.7	-3.8	-3.9	-3.8	-3.6	-3.7	-3.7	-3.9	-3.8	-4.1	-3.8	-4.2	-3.7	-3.0	-2.8	-2.6	-2.4	-2.2	-3.2	-3.2
-2.7	-2.9	-2.6	-2.5	-2.9	-3.0	-3.0	-2.9	-2.9	-3.0	-3.3	-3.5	-3.2	-3.4	-3.4	-3.3	-3.4	-3.5	-3.2	-2.9	-3.1	-3.3	-3.4	-3.1	-3.7	-4.1	-4.4	-4.3	-3.3	-2.5	-2.9	-2.7	-2.3	-2.6	-2.8	-2.7
-2.2	-2.5	-2.7	-3.2	-3.5	-3.7	-3.3	-2.7	-2.2	-2.3	-3.2	-3.7	-3.7	-3.2	-2.9	-2.7	-3.0	-2.3	-1.9	-1.5	-1.4	-1.3	-1.3	-1.2	-1.4	-1.6	-1.6	-1.8	-1.5	-1.2	-1.1	-1.1	-1.0	-1.1	-1.5	-2.0
-2.4	-2.5	-2.5	-2.1	-1.9	-1.7	-1.8	-1.8	-1.9	-2.2	-2.5	-2.7	-2.4	-2.6	-2.3	-1.7	-1.4	-1.4	-1.2	-1.1	-1.2	-1.4	-1.6	-1.8	-1.8	-1.9	-2.0	-2.0	-2.0	-1.9	-1.8	-1.8	-1.9	-1.9	-2.7	-2.4

Figure 45. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2001
Channel: HIRS11 (500 - 700 hPa)
NOAA16, using all observations



-.4	-.5	-.6	-.5	-.5	-.5	-.4	-.4	-.2	.3	.7	.1	-.4	-.6	-.3	.1	-.2	-.4	-.4	-.6	-.5	-.2	-.2	-.2	.0	.1	.1	.0	-.1	-.1	-.1	-.1	.0	-.1	-.2	-.2
.1	.0	.0	.0	.0	.0	.0	.0	.1	.2	.5	.2	.2	.4	-1.0	-.1	.1	.1	.3	.3	.1	.1	.1	.0	.0	.1	.2	.2	.1	.2	.2	.1	.1	.2	.2	.1
.3	.2	.5	1.0	1.1	.8	.6	.8	.5	.2	.8	.3	.3	.4	.4	.2	.2	.3	.2	.1	.3	.2	.2	.2	.0	.0	.1	.6	.6	.6	.8	.9	1.1	.7	.6	.6
.5	.4	.4	.4	.4	.5	.5	.5	.3	.4	.4	.4	.4	.4	.4	.4	.3	.1	.2	.1	.3	.3	.3	.3	.2	.3	.3	.4	.5	.9	.6	.9	.4	.4	.4	.5
.4	.5	.6	.4	.4	.2	.4	.5	.2	.1	.2	.3	.5	.4	.4	.4	.3	.4	.2	.3	.4	.1	.3	.0	.2	.4	.4	.9	1.4	1.0	.6	.5	.3	.4	.5	.5
.4	.4	.3	.4	.4	.3	.4	.6	.1	.3	.3	.4	.4	.2	.4	.3	.2	.4	.3	.3	.2	.2	.4	.6	.7	1.0	1.0	2.6	1.6	.7	.3	.2	.3	.3	.3	.3
.1	.1	.4	.4	.4	.3	.3	.7	.2	.2	.3	.3	.2	.1	.2	.3	.3	.4	.5	1.0	.0	.3	.3	.3	.4	.6	.9	.7	.7	.4	.4	.2	.3	.3	.3	.5
.1	.2	.2	.4	.3	.3	.3	.3	.3	.1	.2	.3	.2	.3	.3	.3	.3	.2	.5	.6	.7	1.0	.6	.3	.3	.3	.2	.2	.3	.3	.2	.1	.1	.2	.2	.4
.1	.2	.2	.3	.2	.3	.4	.4	.4	.1	.0	.2	.0	.3	.2	.2	.1	.2	.1	.1	.3	.6	.6	.3	.3	.2	.0	-.2	-.1	-.1	.0	.0	.1	.1	-.1	.1
.1	.2	.3	.4	.4	.4	.4	.3	.4	.3	-.3	-.4	-.7	-.1	.4	.4	.3	.4	.4	-.4	-.3	.6	.3	.3	.2	.2	-.1	-.1	-.1	.1	.2	-.1	-.1	.0	.0	.2
.0	.0	.2	.2	.2	.3	.4	.4	.4	.3	.9	.3	-.9	-.2	.3	.3	.3	.2	.4	.0	-.3	.3	.2	.3	.3	.3	.2	.4	.4	.3	.4	.1	.3	.3	.2	.1
.2	.2	.3	.3	.3	.2	.3	.3	.4	.4	.5	1.4	.0	.2	.2	.3	.3	.2	.5	.5	.1	.2	.3	.3	.4	.3	.4	.4	.5	.7	.3	.2	.3	.3	.3	.2
.4	.2	.4	.4	.4	.4	.4	.4	.3	.5	.6	.5	.3	.4	.3	.3	.3	.2	.4	.4	.4	.4	.4	.4	.4	.4	.5	.4	.5	.5	.4	.4	.6	.3	.3	.2
.4	.4	.5	.5	.5	.5	.5	.5	.3	.5	.5	.6	.6	.4	.5	.5	.4	.3	.4	.5	.5	.5	.4	.5	.4	.4	.5	.4	.5	.5	.4	.5	.5	.4	.4	.3
.2	.5	.5	.6	.6	.6	.6	.6	.5	.6	.4	.4	.5	.4	.5	.4	.2	.1	.1	.3	.4	.4	.4	.4	.3	.3	.3	.3	.4	.5	.4	.5	.6	.4	.5	.4
.2	.3	.3	.2	.2	.3	.2	.2	.3	.3	.3	.1	.1	.1	.1	-.1	.0	.1	.0	.2	.2	.2	.0	-.4	-.2	-.1	-.4	-.5	-.3	.1	.1	.0	.1	.0	.1	.2
.1	.1	-.1	-.1	-.4	-.7	-.7	-.7	-.9	-.7	-.7	-1.0	-.5	-.2	-.2	-.4	-1.3	-2.8	-3.9	-4.3	-3.8	-3.5	-3.9	-3.6	-2.6	-3.0	-3.7	-4.4	-4.4	-3.9	-3.6	-2.9	-2.6	-2.2	-.6	-.2
-1.5	-1.4	-.8	-.2	-.6	-1.1	-1.6	-2.0	-2.1	-1.6	-1.2	-1.3	-1.3	-1.3	-1.4	-1.7	-2.1	-2.6	-3.0	-3.4	-3.8	-4.6	-5.1	-5.6	-5.7	-6.0	-6.2	-6.0	-5.6	-4.9	-4.3	-4.1	-3.6	-2.3	-1.9	-1.7

Figure 46. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2001
Channel: HIRS11 (500 - 700 hPa)
NOAA16, using all observations

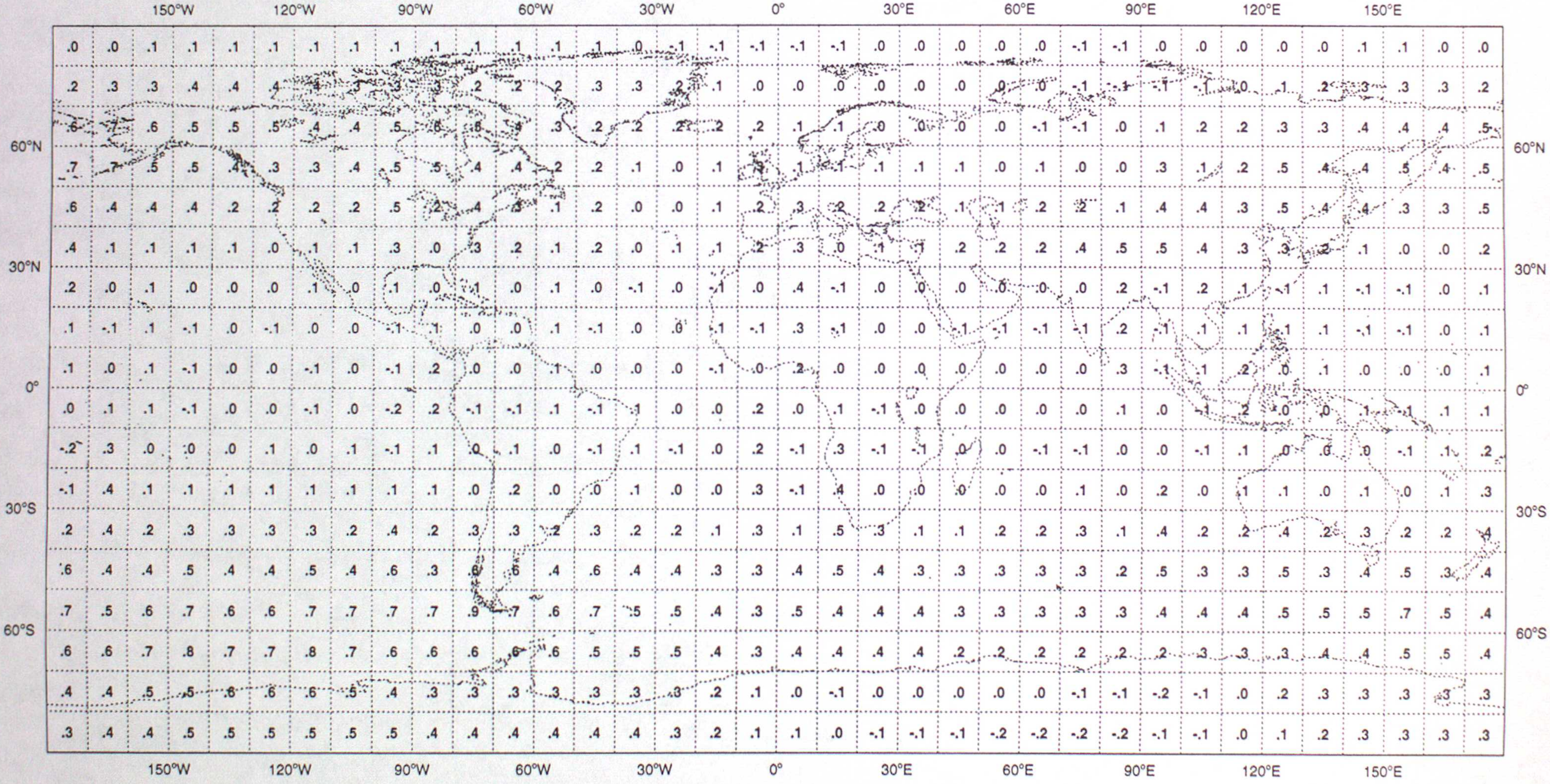

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
.0 .0 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .0 -.1 -.1 -.1 -.1 -.1 .0 .0 .0 .0 .0 -.1 -.1 .0 .0 .0 .0 .0 .1 .1 .0 .0
.2 .3 .3 .4 .4 .4 .4 .3 .3 .3 .2 .2 .2 .3 .3 .2 .1 .0 .0 .0 .0 .0 .0 .0 .0 -.1 -.1 -.1 -.1 .0 .1 .2 .3 .3 .3 .2
.6 .7 .6 .5 .5 .5 .4 .4 .5 .6 .6 .4 .3 .2 .2 .2 .2 .2 .1 .1 .0 .0 .0 .0 -.1 -.1 .0 .1 .2 .2 .3 .3 .4 .4 .4 .5
.7 .7 .5 .5 .4 .3 .3 .4 .5 .5 .4 .4 .2 .2 .1 .0 .1 .3 .1 .1 .1 .1 .1 .0 .1 .0 .0 .3 .1 .2 .5 .4 .4 .5 .4 .5
.6 .4 .4 .4 .2 .2 .2 .2 .5 .2 .4 .3 .1 .2 .0 .0 .1 .2 .3 .2 .2 .2 .1 .1 .2 .2 .1 .4 .4 .3 .5 .4 .4 .3 .3 .5
.4 .1 .1 .1 .1 .0 .1 .1 .3 .0 .3 .2 .1 .2 .0 .1 .1 .2 .3 .0 .1 .1 .2 .2 .2 .4 .5 .5 .4 .3 .3 .2 .1 .0 .0 .2
.2 .0 .1 .0 .0 .0 .1 .0 .1 .0 .1 .0 .1 .0 -.1 .0 -.1 .0 .4 -.1 .0 .0 .0 .0 .0 .0 .2 -.1 .2 .1 -.1 .1 -.1 -.1 .0 .1
.1 -.1 .1 -.1 .0 -.1 .0 .0 -.1 .1 .0 .0 .1 -.1 .0 .0 -.1 -.1 .3 -.1 .0 .0 -.1 -.1 -.1 -.1 .2 -.1 .1 .1 -.1 .1 -.1 -.1 .0 .1
.1 .0 .1 -.1 .0 .0 -.1 .0 -.1 .2 .0 .0 .1 .0 .0 .0 -.1 .0 .2 .0 .0 .0 .0 .0 .0 .0 .3 -.1 .1 .2 .0 .1 .0 .0 .0 .1
.0 .1 .1 -.1 .0 .0 -.1 .0 -.2 .2 -.1 -.1 .1 -.1 .1 .0 .0 .2 .0 .1 -.1 .0 .0 .0 .0 .0 .1 .0 -.1 .2 .0 .0 .1 -.1 .1 .1
-.2 .3 .0 .0 .0 .1 .0 .1 -.1 .1 .0 .1 .0 -.1 .1 -.1 .0 .2 -.1 .3 -.1 -.1 .0 .0 -.1 -.1 .0 .0 -.1 .1 .0 .0 .0 -.1 .1 .2
-.1 .4 .1 .1 .1 .1 .1 .1 .1 .1 .0 .2 .0 .0 .1 .0 .0 .3 -.1 .4 .0 .0 .0 .0 .0 .1 .0 .2 .0 .1 .1 .0 .1 .0 .1 .3
.2 .4 .2 .3 .3 .3 .3 .2 .4 .2 .3 .3 .2 .3 .2 .2 .1 .3 .1 .5 .3 .1 .1 .2 .2 .3 .1 .4 .2 .2 .4 .2 .3 .2 .2 .4
.6 .4 .4 .5 .4 .4 .5 .4 .6 .3 .6 .6 .4 .6 .4 .4 .3 .3 .4 .5 .4 .3 .3 .3 .3 .3 .2 .5 .3 .3 .5 .3 .4 .5 .3 .4
.7 .5 .6 .7 .6 .6 .7 .7 .7 .7 .9 .7 .6 .7 .5 .5 .4 .3 .5 .4 .4 .4 .3 .3 .3 .3 .3 .4 .4 .4 .5 .5 .5 .7 .5 .4
.6 .6 .7 .8 .7 .7 .8 .7 .6 .6 .6 .6 .6 .5 .5 .5 .4 .3 .4 .4 .4 .4 .2 .2 .2 .2 .2 .2 .3 .3 .3 .4 .4 .5 .5 .4
.4 .4 .5 .5 .6 .6 .6 .5 .4 .3 .3 .3 .3 .3 .3 .3 .2 .1 .0 -.1 .0 .0 .0 .0 .0 -.1 -.1 -.2 -.1 .0 .2 .3 .3 .3 .3 .3
.3 .4 .4 .5 .5 .5 .5 .5 .5 .4 .4 .4 .4 .4 .4 .3 .2 .1 .1 .0 -.1 -.1 -.1 -.2 -.2 -.2 -.2 -.1 -.1 .0 .1 .2 .3 .3 .3 .3

Figure 47. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2001
Channel: HIRS4 (400 hPa)
NOAA16, using all observations

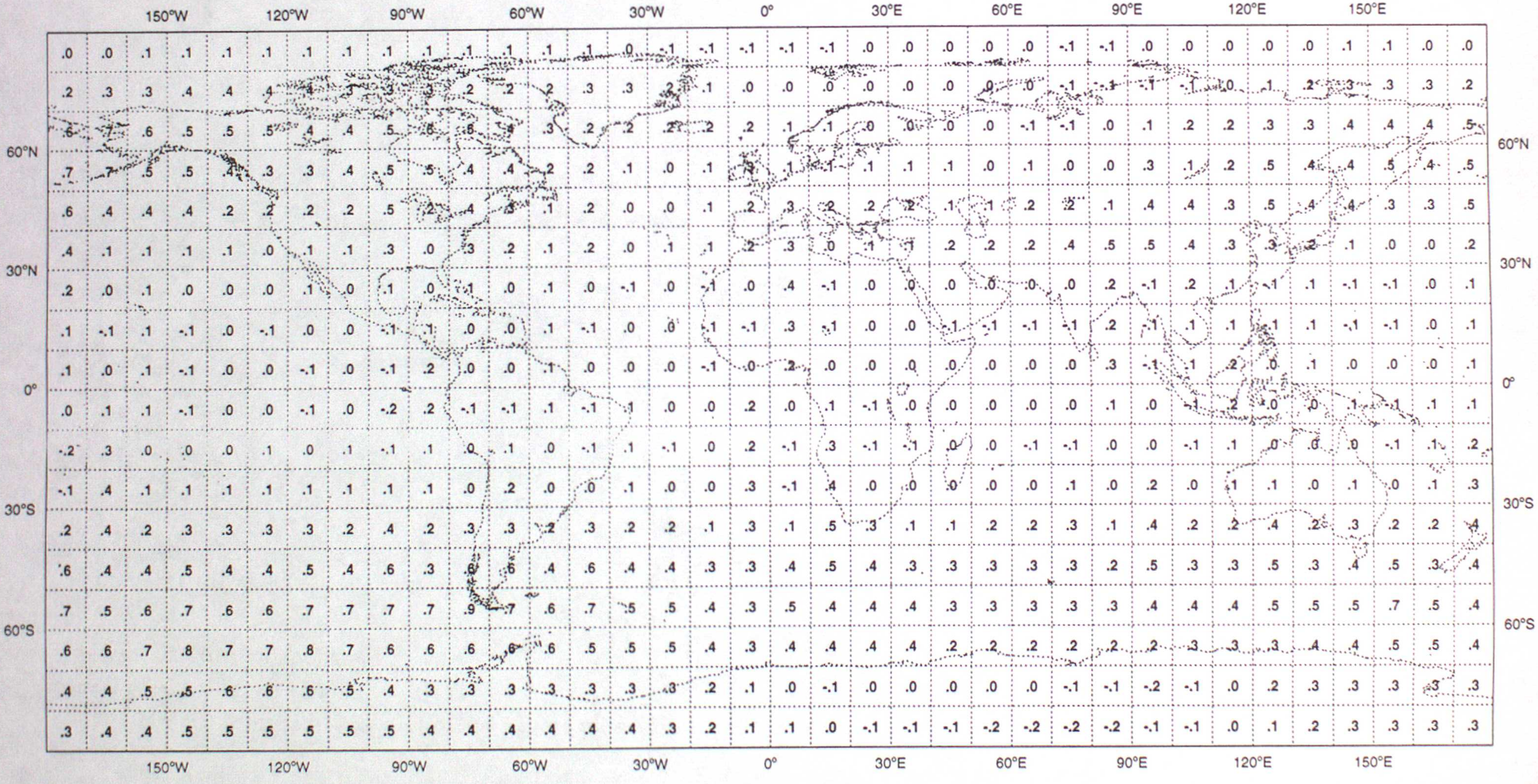

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
.0 .0 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .0 -.1 -.1 -.1 -.1 -.1 .0 .0 .0 .0 .0 -.1 -.1 .0 .0 .0 .0 .0 .1 .1 .0 .0
.2 .3 .3 .4 .4 .4 .4 .3 .3 .3 .2 .2 .2 .3 .3 .2 .1 .0 .0 .0 .0 .0 .0 .0 .0 -.1 -.1 -.1 -.1 .0 .1 .2 .3 .3 .3 .2
.6 .7 .6 .5 .5 .5 .4 .4 .5 .6 .6 .4 .3 .2 .2 .2 .2 .2 .1 .1 .0 .0 .0 .0 -.1 -.1 .0 .1 .2 .2 .3 .3 .4 .4 .4 .5
.7 .7 .5 .5 .4 .3 .3 .4 .5 .5 .4 .4 .2 .2 .1 .0 .1 .3 .1 .1 .1 .1 .1 .0 .1 .0 .0 .3 .1 .2 .5 .4 .4 .5 .4 .5
.6 .4 .4 .4 .2 .2 .2 .2 .5 .2 .4 .3 .1 .2 .0 .0 .1 .2 .3 .2 .2 .2 .1 .1 .2 .2 .1 .4 .4 .3 .5 .4 .4 .3 .3 .5
.4 .1 .1 .1 .1 .0 .1 .1 .3 .0 .3 .2 .1 .2 .0 .1 .1 .2 .3 .0 .1 .1 .2 .2 .2 .4 .5 .5 .4 .3 .3 .2 .1 .0 .0 .2
.2 .0 .1 .0 .0 .0 .1 .0 .1 .0 .1 .0 .1 .0 -.1 .0 -.1 .0 .4 -.1 .0 .0 .0 .0 .0 .0 .2 -.1 .2 .1 -.1 .1 -.1 -.1 .0 .1
.1 -.1 .1 -.1 .0 -.1 .0 .0 -.1 .1 .0 .0 .1 -.1 .0 .0 -.1 -.1 .3 -.1 .0 .0 -.1 -.1 -.1 -.1 .2 -.1 .1 .1 -.1 .1 -.1 -.1 .0 .1
.1 .0 .1 -.1 .0 .0 -.1 .0 -.1 .2 .0 .0 .1 .0 .0 .0 -.1 .0 .2 .0 .0 .0 .0 .0 .0 .0 .3 -.1 .1 .2 .0 .1 .0 .0 .0 .1
.0 .1 .1 -.1 .0 .0 -.1 .0 -.2 .2 -.1 -.1 .1 -.1 .1 .0 .0 .2 .0 .1 -.1 .0 .0 .0 .0 .0 .1 .0 -.1 .2 .0 .0 .1 -.1 .1 .1
-.2 .3 .0 .0 .0 .1 .0 .1 -.1 .1 .0 .1 .0 -.1 .1 -.1 .0 .2 -.1 .3 -.1 -.1 .0 .0 -.1 -.1 .0 .0 -.1 .1 .0 .0 .0 -.1 .1 .2
-.1 .4 .1 .1 .1 .1 .1 .1 .1 .1 .0 .2 .0 .0 .1 .0 .0 .3 -.1 .4 .0 .0 .0 .0 .0 .1 .0 .2 .0 .1 .1 .0 .1 .0 .1 .3
.2 .4 .2 .3 .3 .3 .3 .2 .4 .2 .3 .3 .2 .3 .2 .2 .1 .3 .1 .5 .3 .1 .1 .2 .2 .3 .1 .4 .2 .2 .4 .2 .3 .2 .2 .4
.6 .4 .4 .5 .4 .4 .5 .4 .6 .3 .6 .6 .4 .6 .4 .4 .3 .3 .4 .5 .4 .3 .3 .3 .3 .3 .2 .5 .3 .3 .5 .3 .4 .5 .3 .4
.7 .5 .6 .7 .6 .6 .7 .7 .7 .7 .9 .7 .6 .7 .5 .5 .4 .3 .5 .4 .4 .4 .3 .3 .3 .3 .3 .4 .4 .4 .5 .5 .5 .7 .5 .4
.6 .6 .7 .8 .7 .7 .8 .7 .6 .6 .6 .6 .6 .5 .5 .5 .4 .3 .4 .4 .4 .4 .2 .2 .2 .2 .2 .2 .3 .3 .3 .4 .4 .5 .5 .4
.4 .4 .5 .5 .6 .6 .6 .5 .4 .3 .3 .3 .3 .3 .3 .3 .2 .1 .0 -.1 .0 .0 .0 .0 .0 -.1 -.1 -.2 -.1 .0 .2 .3 .3 .3 .3 .3
.3 .4 .4 .5 .5 .5 .5 .5 .5 .4 .4 .4 .4 .4 .4 .3 .2 .1 .1 .0 -.1 -.1 -.1 -.2 -.2 -.2 -.2 -.1 -.1 .0 .1 .2 .3 .3 .3 .3

Figure 48. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2001

Channel: HIRS4 (400 hPa)

NOAA16, using all observations

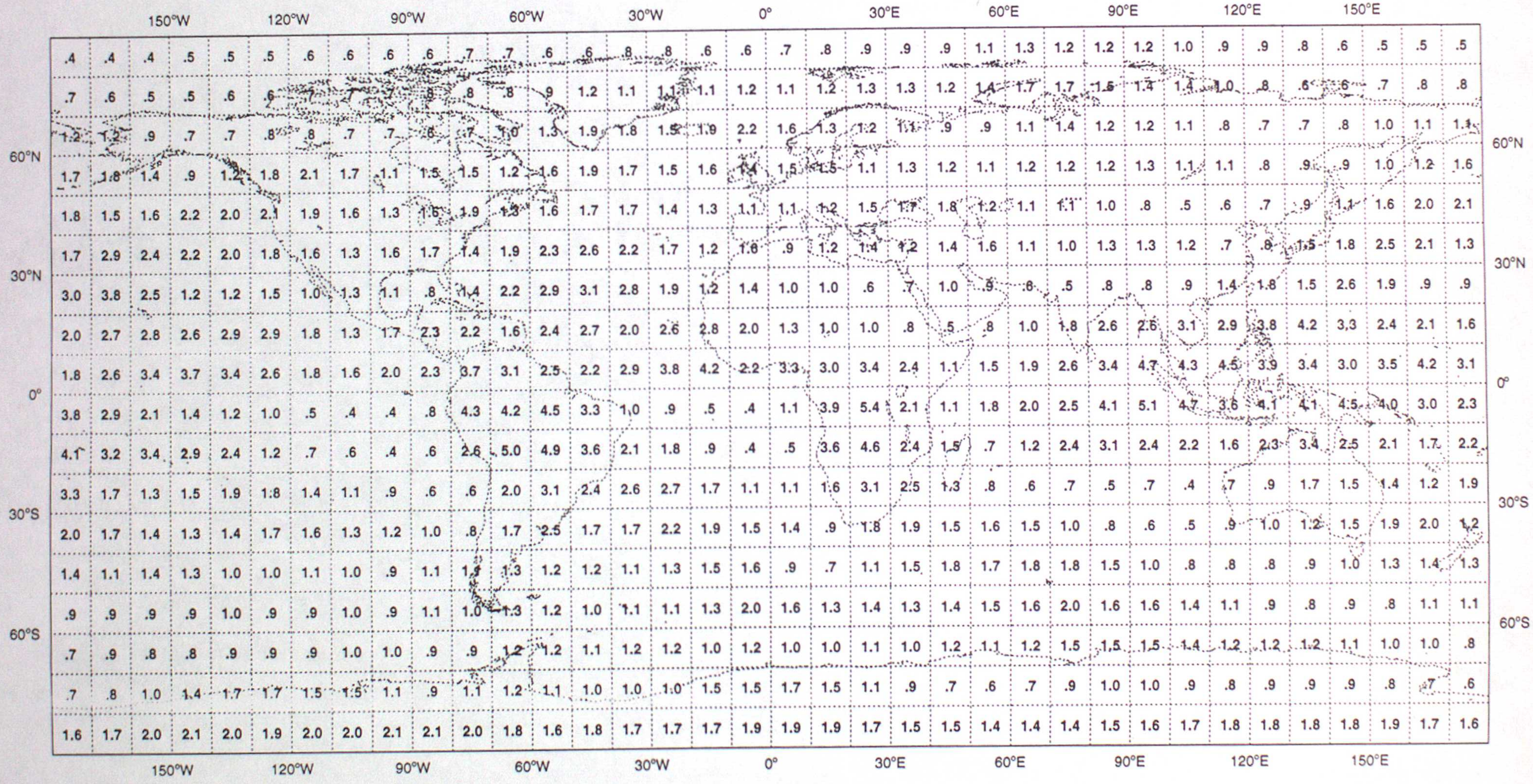
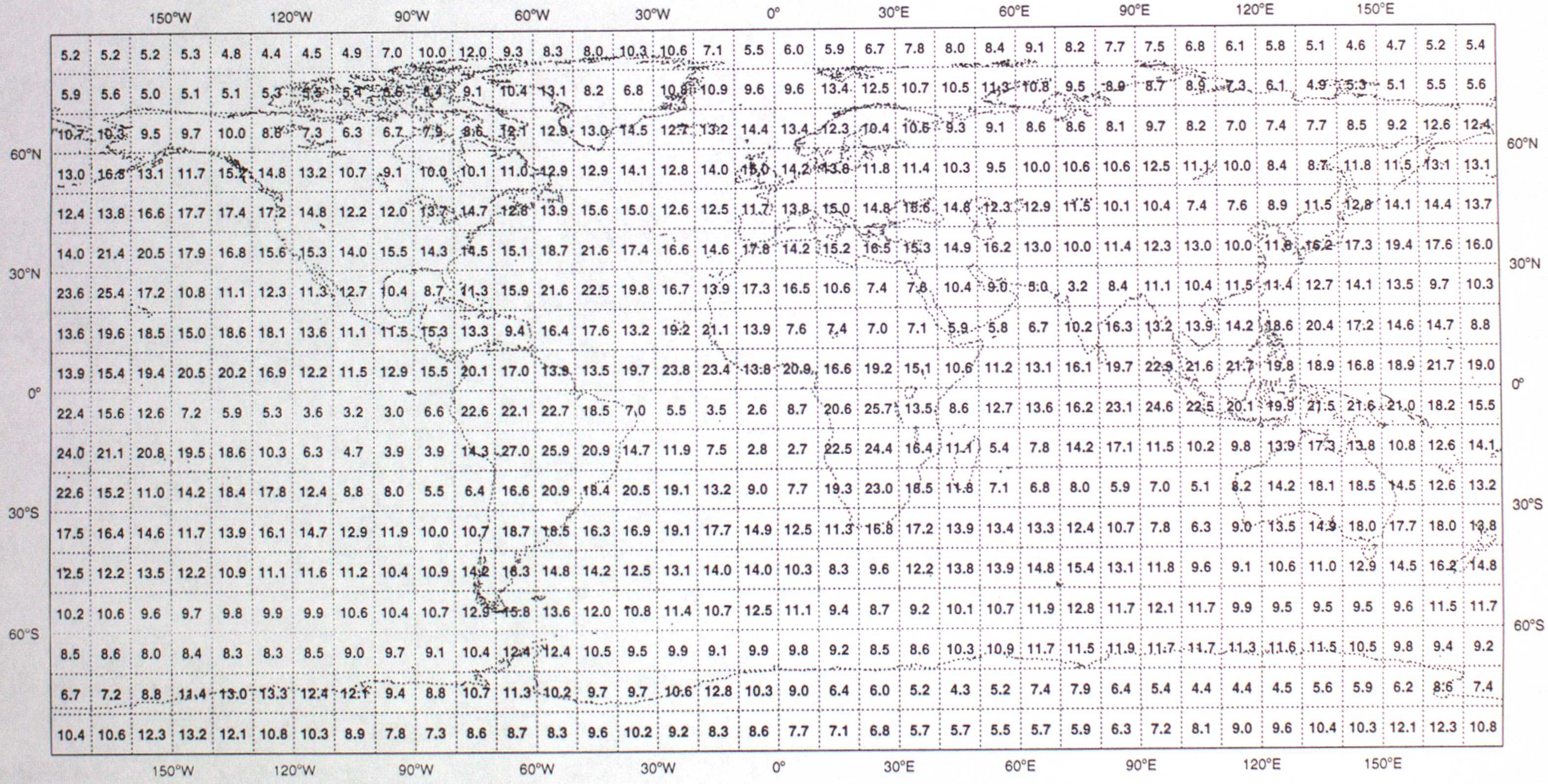

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
.4 .4 .4 .5 .5 .5 .6 .6 .6 .6 .7 .7 .6 .6 .8 .8 .6 .6 .7 .8 .9 .9 .9 1.1 1.3 1.2 1.2 1.2 1.0 .9 .9 .8 .6 .5 .5 .5
.7 .6 .5 .5 .6 .6 .7 .7 .7 .8 .8 .8 .9 1.2 1.1 1.1 1.1 1.2 1.1 1.2 1.3 1.3 1.2 1.4 1.7 1.7 1.5 1.4 1.4 1.0 .8 .6 .6 .7 .8 .8
1.2 1.2 .9 .7 .7 .8 .8 .7 .7 .6 .7 1.0 1.3 1.9 1.8 1.5 1.9 2.2 1.6 1.3 1.2 1.1 .9 .9 1.1 1.4 1.2 1.2 1.1 .8 .7 .7 .8 1.0 1.1 1.1
1.7 1.8 1.4 .9 1.2 1.8 2.1 1.7 1.1 1.5 1.5 1.2 1.6 1.9 1.7 1.5 1.6 1.4 1.5 1.5 1.1 1.3 1.2 1.1 1.2 1.2 1.2 1.3 1.1 1.1 .8 .9 .9 1.0 1.2 1.6
1.8 1.5 1.6 2.2 2.0 2.1 1.9 1.6 1.3 1.6 1.9 1.3 1.6 1.7 1.7 1.4 1.3 1.1 1.1 1.2 1.5 1.7 1.8 1.2 1.1 1.1 1.0 .8 .5 .6 .7 .9 1.1 1.6 2.0 2.1
1.7 2.9 2.4 2.2 2.0 1.8 1.6 1.3 1.6 1.7 1.4 1.9 2.3 2.6 2.2 1.7 1.2 1.6 .9 1.2 1.4 1.2 1.4 1.6 1.1 1.0 1.3 1.3 1.2 .7 .8 1.5 1.8 2.5 2.1 1.3
3.0 3.8 2.5 1.2 1.2 1.5 1.0 1.3 1.1 .8 1.4 2.2 2.9 3.1 2.8 1.9 1.2 1.4 1.0 1.0 .6 .7 1.0 .9 .6 .5 .8 .8 .9 1.4 1.8 1.5 2.6 1.9 .9 .9
2.0 2.7 2.8 2.6 2.9 2.9 1.8 1.3 1.7 2.3 2.2 1.6 2.4 2.7 2.0 2.6 2.8 2.0 1.3 1.0 1.0 .8 .5 .8 1.0 1.8 2.6 2.6 3.1 2.9 3.8 4.2 3.3 2.4 2.1 1.6
1.8 2.6 3.4 3.7 3.4 2.6 1.8 1.6 2.0 2.3 3.7 3.1 2.5 2.2 2.9 3.8 4.2 2.2 3.3 3.0 3.4 2.4 1.1 1.5 1.9 2.6 3.4 4.7 4.3 4.5 3.9 3.4 3.0 3.5 4.2 3.1
3.8 2.9 2.1 1.4 1.2 1.0 .5 .4 .4 .8 4.3 4.2 4.5 3.3 1.0 .9 .5 .4 1.1 3.9 5.4 2.1 1.1 1.8 2.0 2.5 4.1 5.1 4.7 3.6 4.1 4.1 4.5 4.0 3.0 2.3
4.1 3.2 3.4 2.9 2.4 1.2 .7 .6 .4 .6 2.6 5.0 4.9 3.6 2.1 1.8 .9 .4 .5 3.6 4.6 2.4 1.5 .7 1.2 2.4 3.1 2.4 2.2 1.6 2.3 3.4 2.5 2.1 1.7 2.2
3.3 1.7 1.3 1.5 1.9 1.8 1.4 1.1 .9 .6 .6 2.0 3.1 2.4 2.6 2.7 1.7 1.1 1.1 1.6 3.1 2.5 1.3 .8 .6 .7 .5 .7 .4 .7 .9 1.7 1.5 1.4 1.2 1.9
2.0 1.7 1.4 1.3 1.4 1.7 1.6 1.3 1.2 1.0 .8 1.7 2.5 1.7 1.7 2.2 1.9 1.5 1.4 .9 1.8 1.9 1.5 1.6 1.5 1.0 .8 .6 .5 .9 1.0 1.2 1.5 1.9 2.0 1.2
1.4 1.1 1.4 1.3 1.0 1.0 1.1 1.0 .9 1.1 1.1 1.3 1.2 1.2 1.1 1.3 1.5 1.6 .9 .7 1.1 1.5 1.8 1.7 1.8 1.8 1.5 1.0 .8 .8 .8 .9 1.0 1.3 1.4 1.3
.9 .9 .9 .9 1.0 .9 .9 1.0 .9 1.1 1.0 1.3 1.2 1.0 1.1 1.1 1.3 2.0 1.6 1.3 1.4 1.3 1.4 1.5 1.6 2.0 1.6 1.6 1.4 1.1 .9 .8 .9 .8 1.1 1.1
.7 .9 .8 .8 .9 .9 .9 1.0 1.0 .9 .9 1.2 1.2 1.1 1.2 1.2 1.0 1.2 1.0 1.0 1.1 1.0 1.2 1.1 1.2 1.5 1.5 1.5 1.4 1.2 1.2 1.2 1.1 1.0 1.0 .8
.7 .8 1.0 1.4 1.7 1.7 1.5 1.5 1.1 .9 1.1 1.2 1.1 1.0 1.0 1.0 1.5 1.5 1.7 1.5 1.1 .9 .7 .6 .7 .9 1.0 1.0 .9 .8 .9 .9 .9 .8 .7 .6
1.6 1.7 2.0 2.1 2.0 1.9 2.0 2.0 2.1 2.1 2.0 1.8 1.6 1.8 1.7 1.7 1.7 1.9 1.9 1.9 1.7 1.5 1.5 1.4 1.4 1.4 1.5 1.6 1.7 1.8 1.8 1.8 1.8 1.9 1.7 1.6

Figure 49. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2001

Channel: AMSUA-5 (700 hPa)

NOAA16, using all observations

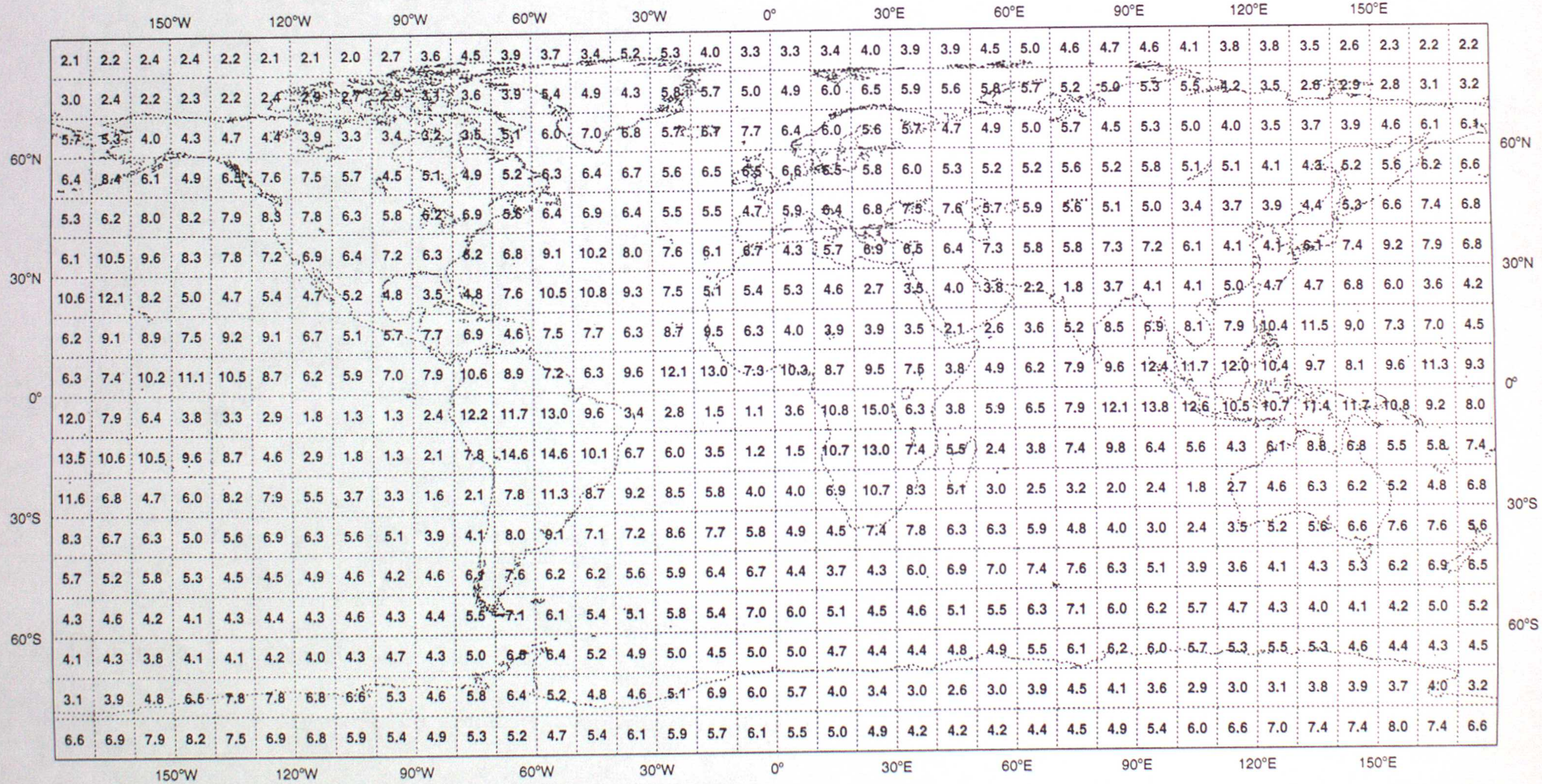


5.2	5.2	5.2	5.3	4.8	4.4	4.5	4.9	7.0	10.0	12.0	9.3	8.3	8.0	10.3	10.6	7.1	5.5	6.0	5.9	6.7	7.8	8.0	8.4	9.1	8.2	7.7	7.5	6.8	6.1	5.8	5.1	4.6	4.7	5.2	5.4
5.9	5.6	5.0	5.1	5.1	5.3	5.5	5.4	6.6	8.4	9.1	10.4	13.1	8.2	6.8	10.8	10.9	9.6	9.6	13.4	12.5	10.7	10.5	11.3	10.8	9.5	8.9	8.7	8.9	7.3	6.1	4.9	5.3	5.1	5.5	5.6
10.7	10.3	9.5	9.7	10.0	8.8	7.3	6.3	6.7	7.9	8.6	12.1	12.9	13.0	14.5	12.7	13.2	14.4	13.4	12.3	10.4	10.6	9.3	9.1	8.6	8.6	8.1	9.7	8.2	7.0	7.4	7.7	8.5	9.2	12.6	12.4
13.0	16.8	13.1	11.7	15.2	14.8	13.2	10.7	9.1	10.0	10.1	11.0	12.9	12.9	14.1	12.8	14.0	15.0	14.2	13.8	11.8	11.4	10.3	9.5	10.0	10.6	10.6	12.5	11.1	10.0	8.4	8.7	11.8	11.5	13.1	13.1
12.4	13.8	16.6	17.7	17.4	17.2	14.8	12.2	12.0	13.7	14.7	12.8	13.9	15.6	15.0	12.6	12.5	11.7	13.8	15.0	14.8	15.6	14.8	12.3	12.9	11.5	10.1	10.4	7.4	7.6	8.9	11.5	12.8	14.1	14.4	13.7
14.0	21.4	20.5	17.9	16.8	15.6	15.3	14.0	15.5	14.3	14.5	15.1	18.7	21.6	17.4	16.6	14.6	17.8	14.2	15.2	16.5	15.3	14.9	16.2	13.0	10.0	11.4	12.3	13.0	10.0	11.8	16.2	17.3	19.4	17.6	16.0
23.6	25.4	17.2	10.8	11.1	12.3	11.3	12.7	10.4	8.7	11.3	15.9	21.6	22.5	19.8	16.7	13.9	17.3	16.5	10.6	7.4	7.8	10.4	9.0	5.0	3.2	8.4	11.1	10.4	11.5	11.4	12.7	14.1	13.5	9.7	10.3
13.6	19.6	18.5	15.0	18.6	18.1	13.6	11.1	11.5	15.3	13.3	9.4	16.4	17.6	13.2	19.2	21.1	13.9	7.6	7.4	7.0	7.1	5.9	5.8	6.7	10.2	16.3	13.2	13.9	14.2	18.6	20.4	17.2	14.6	14.7	8.8
13.9	15.4	19.4	20.5	20.2	16.9	12.2	11.5	12.9	15.5	20.1	17.0	13.9	13.5	19.7	23.8	23.4	13.8	20.9	16.6	19.2	15.1	10.6	11.2	13.1	16.1	19.7	22.9	21.6	21.7	19.8	18.9	16.8	18.9	21.7	19.0
22.4	15.6	12.6	7.2	5.9	5.3	3.6	3.2	3.0	6.6	22.6	22.1	22.7	18.5	7.0	5.5	3.5	2.6	8.7	20.6	25.7	13.5	8.6	12.7	13.6	16.2	23.1	24.6	22.5	20.1	19.9	21.5	21.6	21.0	18.2	15.5
24.0	21.1	20.8	19.5	18.6	10.3	6.3	4.7	3.9	3.9	14.3	27.0	25.9	20.9	14.7	11.9	7.5	2.8	2.7	22.5	24.4	16.4	11.1	5.4	7.8	14.2	17.1	11.5	10.2	9.8	13.9	17.3	13.8	10.8	12.6	14.1
22.6	15.2	11.0	14.2	18.4	17.8	12.4	8.8	8.0	5.5	6.4	16.6	20.9	18.4	20.5	19.1	13.2	9.0	7.7	19.3	23.0	18.5	11.8	7.1	6.8	8.0	5.9	7.0	5.1	8.2	14.2	18.1	18.5	14.5	12.6	13.2
17.5	16.4	14.6	11.7	13.9	16.1	14.7	12.9	11.9	10.0	10.7	18.7	18.5	16.3	16.9	19.1	17.7	14.9	12.5	11.3	16.8	17.2	13.9	13.4	13.3	12.4	10.7	7.8	6.3	9.0	13.5	14.9	18.0	17.7	18.0	13.8
12.5	12.2	13.5	12.2	10.9	11.1	11.6	11.2	10.4	10.9	14.2	18.3	14.8	14.2	12.5	13.1	14.0	14.0	10.3	8.3	9.6	12.2	13.8	13.9	14.8	15.4	13.1	11.8	9.6	9.1	10.6	11.0	12.9	14.5	16.2	14.8
10.2	10.6	9.6	9.7	9.8	9.9	9.9	10.6	10.4	10.7	12.9	15.8	13.6	12.0	10.8	11.4	10.7	12.5	11.1	9.4	8.7	9.2	10.1	10.7	11.9	12.8	11.7	12.1	11.7	9.9	9.5	9.5	9.5	9.6	11.5	11.7
8.5	8.6	8.0	8.4	8.3	8.3	8.5	9.0	9.7	9.1	10.4	12.4	12.4	10.5	9.5	9.9	9.1	9.9	9.8	9.2	8.5	8.6	10.3	10.9	11.7	11.5	11.9	11.7	11.7	11.3	11.6	11.5	10.5	9.8	9.4	9.2
6.7	7.2	8.8	11.4	13.0	13.3	12.4	12.1	9.4	8.8	10.7	11.3	10.2	9.7	9.7	10.6	12.8	10.3	9.0	6.4	6.0	5.2	4.3	5.2	7.4	7.9	6.4	5.4	4.4	4.4	4.5	5.6	5.9	6.2	8.6	7.4
10.4	10.6	12.3	13.2	12.1	10.8	10.3	8.9	7.8	7.3	8.6	8.7	8.3	9.6	10.2	9.2	8.3	8.6	7.7	7.1	6.8	5.7	5.7	5.5	5.7	5.9	6.3	7.2	8.1	9.0	9.6	10.4	10.3	12.1	12.3	10.8

Figure 50. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2001

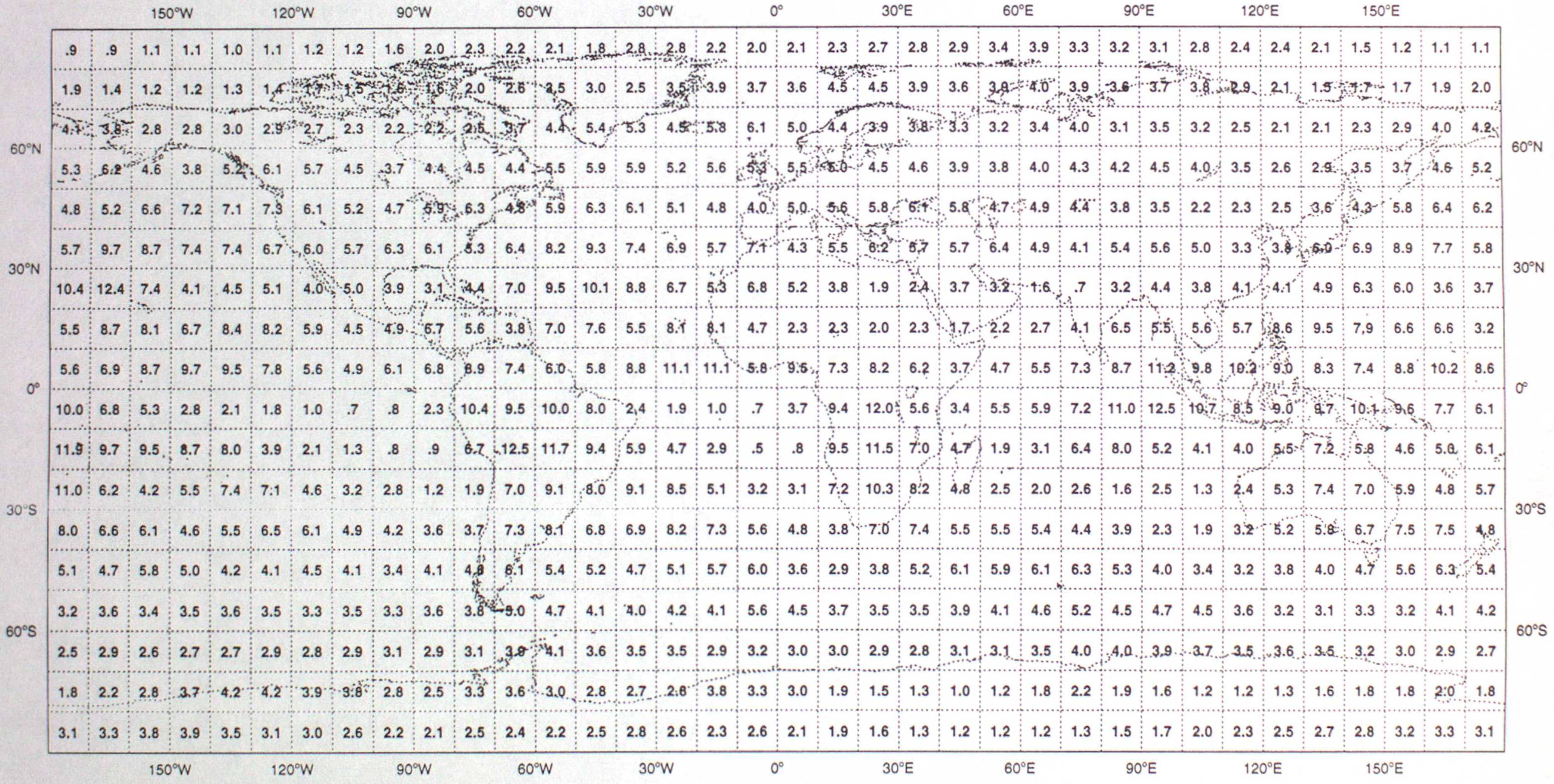
Channel: AMSUA-5 (700 hPa)

NOAA16, using all observations



2.1	2.2	2.4	2.4	2.2	2.1	2.1	2.0	2.7	3.6	4.5	3.9	3.7	3.4	5.2	5.3	4.0	3.3	3.3	3.4	4.0	3.9	3.9	4.5	5.0	4.6	4.7	4.6	4.1	3.8	3.8	3.5	2.6	2.3	2.2	2.2
3.0	2.4	2.2	2.3	2.2	2.4	2.9	2.7	2.9	3.1	3.6	3.9	5.4	4.9	4.3	5.8	5.7	5.0	4.9	6.0	6.5	5.9	5.6	5.8	5.7	5.2	5.0	5.3	5.5	4.2	3.5	2.8	2.9	2.8	3.1	3.2
5.7	5.3	4.0	4.3	4.7	4.4	3.9	3.3	3.4	3.2	3.5	5.1	6.0	7.0	6.8	5.7	5.7	7.7	6.4	6.0	5.6	5.7	4.7	4.9	5.0	5.7	4.5	5.3	5.0	4.0	3.5	3.7	3.9	4.6	6.1	6.1
6.4	8.4	6.1	4.9	6.5	7.6	7.5	5.7	4.5	5.1	4.9	5.2	6.3	6.4	6.7	5.6	6.5	6.5	6.6	6.5	5.8	6.0	5.3	5.2	5.2	5.6	5.2	5.8	5.1	5.1	4.1	4.3	5.2	5.6	6.2	6.6
5.3	6.2	8.0	8.2	7.9	8.3	7.8	6.3	5.8	6.2	6.9	5.6	6.4	6.9	6.4	5.5	5.5	4.7	5.9	6.4	6.8	7.5	7.6	5.7	5.9	5.6	5.1	5.0	3.4	3.7	3.9	4.4	5.3	6.6	7.4	6.8
6.1	10.5	9.6	8.3	7.8	7.2	6.9	6.4	7.2	6.3	6.2	6.8	9.1	10.2	8.0	7.6	6.1	6.7	4.3	5.7	6.9	6.5	6.4	7.3	5.8	5.8	7.3	7.2	6.1	4.1	4.1	6.1	7.4	9.2	7.9	6.8
10.6	12.1	8.2	5.0	4.7	5.4	4.7	5.2	4.8	3.5	4.8	7.6	10.5	10.8	9.3	7.5	5.1	5.4	5.3	4.6	2.7	3.5	4.0	3.8	2.2	1.8	3.7	4.1	4.1	5.0	4.7	4.7	6.8	6.0	3.6	4.2
6.2	9.1	8.9	7.5	9.2	9.1	6.7	5.1	5.7	7.7	6.9	4.6	7.5	7.7	6.3	8.7	9.5	6.3	4.0	3.9	3.9	3.5	2.1	2.6	3.6	5.2	8.5	6.9	8.1	7.9	10.4	11.5	9.0	7.3	7.0	4.5
6.3	7.4	10.2	11.1	10.5	8.7	6.2	5.9	7.0	7.9	10.6	8.9	7.2	6.3	9.6	12.1	13.0	7.3	10.3	8.7	9.5	7.5	3.8	4.9	6.2	7.9	9.6	12.4	11.7	12.0	10.4	9.7	8.1	9.6	11.3	9.3
12.0	7.9	6.4	3.8	3.3	2.9	1.8	1.3	1.3	2.4	12.2	11.7	13.0	9.6	3.4	2.8	1.5	1.1	3.6	10.8	15.0	6.3	3.8	5.9	6.5	7.9	12.1	13.8	12.6	10.5	10.7	11.4	11.7	10.8	9.2	8.0
13.5	10.6	10.5	9.6	8.7	4.6	2.9	1.8	1.3	2.1	7.8	14.6	14.6	10.1	6.7	6.0	3.5	1.2	1.5	10.7	13.0	7.4	5.5	2.4	3.8	7.4	9.8	6.4	5.6	4.3	6.1	8.8	6.8	5.5	5.8	7.4
11.6	6.8	4.7	6.0	8.2	7.9	5.5	3.7	3.3	1.6	2.1	7.8	11.3	8.7	9.2	8.5	5.8	4.0	4.0	6.9	10.7	8.3	5.1	3.0	2.5	3.2	2.0	2.4	1.8	2.7	4.6	6.3	6.2	5.2	4.8	6.8
8.3	6.7	6.3	5.0	5.6	6.9	6.3	5.6	5.1	3.9	4.1	8.0	9.1	7.1	7.2	8.6	7.7	5.8	4.9	4.5	7.4	7.8	6.3	6.3	5.9	4.8	4.0	3.0	2.4	3.5	5.2	5.6	6.6	7.6	7.6	5.6
5.7	5.2	5.8	5.3	4.5	4.5	4.9	4.6	4.2	4.6	6.9	7.6	6.2	6.2	5.6	5.9	6.4	6.7	4.4	3.7	4.3	6.0	6.9	7.0	7.4	7.6	6.3	5.1	3.9	3.6	4.1	4.3	5.3	6.2	6.9	6.5
4.3	4.6	4.2	4.1	4.3	4.4	4.3	4.6	4.3	4.4	5.5	7.1	6.1	5.4	5.1	5.8	5.4	7.0	6.0	5.1	4.5	4.6	5.1	5.5	6.3	7.1	6.0	6.2	5.7	4.7	4.3	4.0	4.1	4.2	5.0	5.2
4.1	4.3	3.8	4.1	4.1	4.2	4.0	4.3	4.7	4.3	5.0	6.8	6.4	5.2	4.9	5.0	4.5	5.0	5.0	4.7	4.4	4.4	4.8	4.9	5.5	6.1	6.2	6.0	5.7	5.3	5.5	5.3	4.6	4.4	4.3	4.5
3.1	3.9	4.8	6.6	7.8	7.8	6.8	6.6	5.3	4.6	5.8	6.4	5.2	4.8	4.6	5.1	6.9	6.0	5.7	4.0	3.4	3.0	2.6	3.0	3.9	4.5	4.1	3.6	2.9	3.0	3.1	3.8	3.9	3.7	4.0	3.2
6.6	6.9	7.9	8.2	7.5	6.9	6.8	5.9	5.4	4.9	5.3	5.2	4.7	5.4	6.1	5.9	5.7	6.1	5.5	5.0	4.9	4.2	4.2	4.2	4.4	4.5	4.9	5.4	6.0	6.6	7.0	7.4	7.4	8.0	7.4	6.6

Figure 51. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2001
Channel: AMSUA-7 (300 hPa)
NOAA16, using all observations



.9	.9	1.1	1.1	1.0	1.1	1.2	1.2	1.6	2.0	2.3	2.2	2.1	1.8	2.8	2.8	2.2	2.0	2.1	2.3	2.7	2.8	2.9	3.4	3.9	3.3	3.2	3.1	2.8	2.4	2.4	2.1	1.5	1.2	1.1	1.1
1.9	1.4	1.2	1.2	1.3	1.4	1.7	1.5	1.6	1.6	2.0	2.6	2.5	3.0	2.5	3.5	3.9	3.7	3.6	4.5	4.5	3.9	3.6	3.8	4.0	3.9	3.6	3.7	3.8	2.9	2.1	1.5	1.7	1.7	1.9	2.0
4.1	3.8	2.8	2.8	3.0	2.9	2.7	2.3	2.2	2.2	2.5	3.7	4.4	5.4	5.3	4.5	5.8	6.1	5.0	4.4	3.9	3.8	3.3	3.2	3.4	4.0	3.1	3.5	3.2	2.5	2.1	2.1	2.3	2.9	4.0	4.2
5.3	6.2	4.6	3.8	5.2	6.1	5.7	4.5	3.7	4.4	4.5	4.4	5.5	5.9	5.9	5.2	5.6	5.3	5.5	5.0	4.5	4.6	3.9	3.8	4.0	4.3	4.2	4.5	4.0	3.5	2.6	2.9	3.5	3.7	4.6	5.2
4.8	5.2	6.6	7.2	7.1	7.3	6.1	5.2	4.7	5.9	6.3	4.8	5.9	6.3	6.1	5.1	4.8	4.0	5.0	5.6	5.8	6.1	5.8	4.7	4.9	4.4	3.8	3.5	2.2	2.3	2.5	3.6	4.3	5.8	6.4	6.2
5.7	9.7	8.7	7.4	7.4	6.7	6.0	5.7	6.3	6.1	5.3	6.4	8.2	9.3	7.4	6.9	5.7	7.1	4.3	5.5	6.2	5.7	5.7	6.4	4.9	4.1	5.4	5.6	5.0	3.3	3.8	6.0	6.9	8.9	7.7	5.8
10.4	12.4	7.4	4.1	4.5	5.1	4.0	5.0	3.9	3.1	4.4	7.0	9.5	10.1	8.8	6.7	5.3	6.8	5.2	3.8	1.9	2.4	3.7	3.2	1.6	.7	3.2	4.4	3.8	4.1	4.1	4.9	6.3	6.0	3.6	3.7
5.5	8.7	8.1	6.7	8.4	8.2	5.9	4.5	4.9	6.7	5.6	3.8	7.0	7.6	5.5	8.1	8.1	4.7	2.3	2.3	2.0	2.3	1.7	2.2	2.7	4.1	6.5	5.5	5.6	5.7	8.6	9.5	7,9	6.6	6.6	3.2
5.6	6.9	8.7	9.7	9.5	7.8	5.6	4.9	6.1	6.8	8.9	7.4	6.0	5.8	8.8	11.1	11.1	5.8	9.5	7.3	8.2	6.2	3.7	4.7	5.5	7.3	8.7	11.2	9.8	10.2	9.0	8.3	7.4	8.8	10.2	8.6
10.0	6.8	5.3	2.8	2.1	1.8	1.0	.7	.8	2.3	10.4	9.5	10.0	8.0	2.4	1.9	1.0	.7	3.7	9.4	12.0	5.6	3.4	5.5	5.9	7.2	11.0	12.5	10.7	8.5	9.0	9.7	10.1	9.6	7.7	6.1
11.9	9.7	9.5	8.7	8.0	3.9	2.1	1.3	.8	.9	6.7	12.5	11.7	9.4	5.9	4.7	2.9	.5	.8	9.5	11.5	7.0	4.7	1.9	3.1	6.4	8.0	5.2	4.1	4.0	5.5	7.2	5.8	4.6	5.0	6.1
11.0	6.2	4.2	5.5	7.4	7.1	4.6	3.2	2.8	1.2	1.9	7.0	9.1	8.0	9.1	8.5	5.1	3.2	3.1	7.2	10.3	8.2	4.8	2.5	2.0	2.6	1.6	2.5	1.3	2.4	5.3	7.4	7.0	5.9	4.8	5.7
8.0	6.6	6.1	4.6	5.5	6.5	6.1	4.9	4.2	3.6	3.7	7.3	8.1	6.8	6.9	8.2	7.3	5.6	4.8	3.8	7.0	7.4	5.5	5.5	5.4	4.4	3.9	2.3	1.9	3.2	5.2	5.8	6.7	7.5	7.5	4.8
5.1	4.7	5.8	5.0	4.2	4.1	4.5	4.1	3.4	4.1	4.8	6.1	5.4	5.2	4.7	5.1	5.7	6.0	3.6	2.9	3.8	5.2	6.1	5.9	6.1	6.3	5.3	4.0	3.4	3.2	3.8	4.0	4.7	5.6	6.3	5.4
3.2	3.6	3.4	3.5	3.6	3.5	3.3	3.5	3.3	3.6	3.8	5.0	4.7	4.1	4.0	4.2	4.1	5.6	4.5	3.7	3.5	3.5	3.9	4.1	4.6	5.2	4.5	4.7	4.5	3.6	3.2	3.1	3.3	3.2	4.1	4.2
2.5	2.9	2.6	2.7	2.7	2.9	2.8	2.9	3.1	2.9	3.1	3.8	4.1	3.6	3.5	3.5	2.9	3.2	3.0	3.0	2.9	2.8	3.1	3.1	3.5	4.0	4.0	3.9	3.7	3.5	3.6	3.5	3.2	3.0	2.9	2.7
1.8	2.2	2.8	3.7	4.2	4.2	3.9	3.8	2.8	2.5	3.3	3.6	3.0	2.8	2.7	2.6	3.8	3.3	3.0	1.9	1.5	1.3	1.0	1.2	1.8	2.2	1.9	1.6	1.2	1.2	1.3	1.6	1.8	1.8	2.0	1.8
3.1	3.3	3.8	3.9	3.5	3.1	3.0	2.6	2.2	2.1	2.5	2.4	2.2	2.5	2.8	2.6	2.3	2.6	2.1	1.9	1.6	1.3	1.2	1.2	1.2	1.3	1.5	1.7	2.0	2.3	2.5	2.7	2.8	3.2	3.3	3.1

Figure 52. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2001

Channel: AMSUA-7 (300 hPa)

NOAA16, using all observations

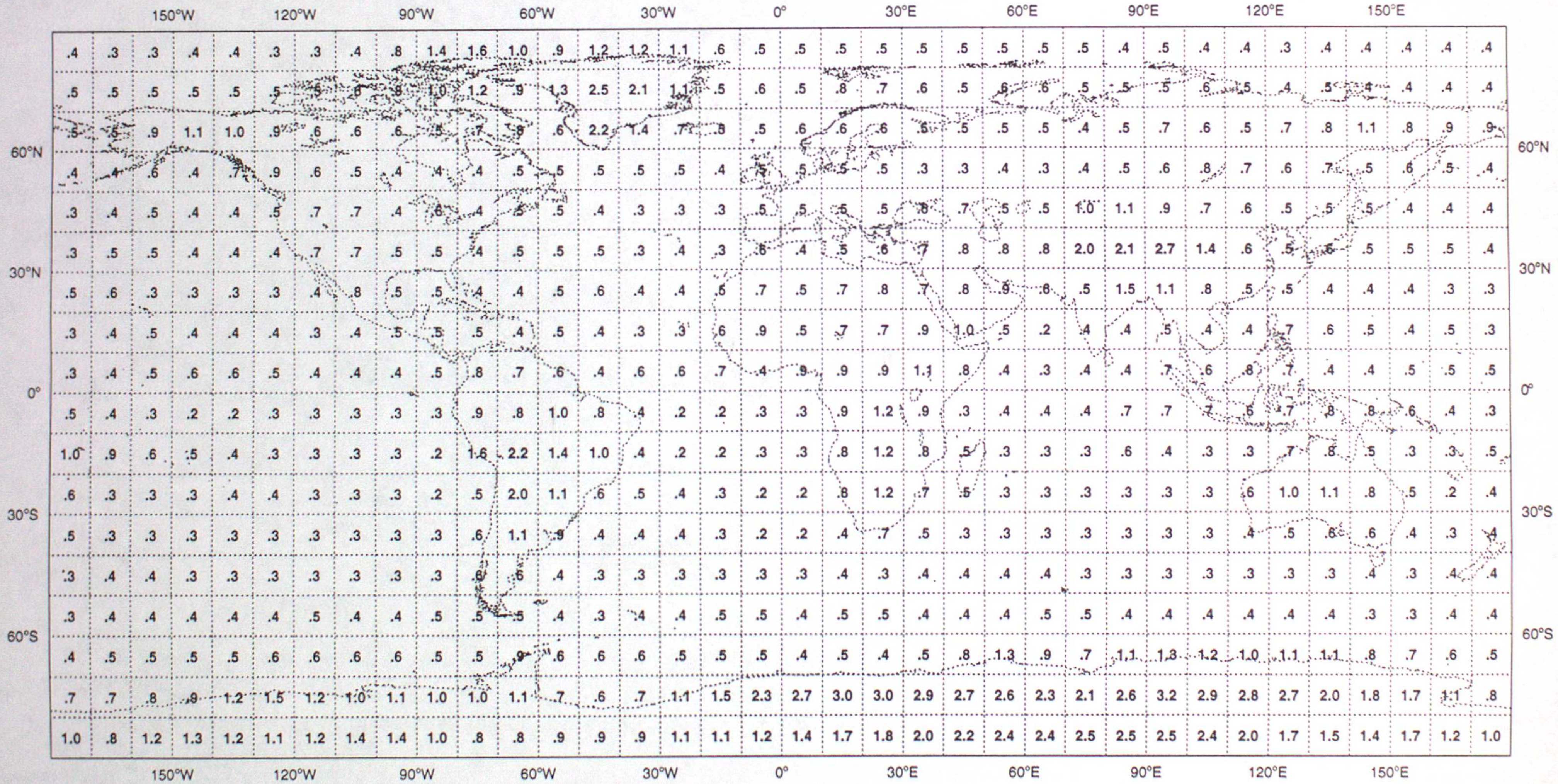

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
.4 .3 .3 .4 .4 .3 .3 .4 .8 1.4 1.6 1.0 .9 1.2 1.2 1.1 .6 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .5 .4 .4 .3 .4 .4 .4 .4 .4
.5 .5 .5 .5 .5 .5 .5 .6 .8 1.0 1.2 .9 1.3 2.5 2.1 1.1 .5 .6 .5 .8 .7 .6 .5 .6 .6 .5 .5 .5 .6 .5 .4 .5 .4 .4 .4 .4
.5 .5 .9 1.1 1.0 .9 .6 .6 .6 .5 .7 .8 .6 2.2 1.4 .7 .8 .5 .6 .6 .6 .5 .5 .5 .5 .4 .5 .7 .6 .5 .7 .8 1.1 .8 .9 .9
.4 .4 .6 .4 .7 .9 .6 .5 .4 .4 .4 .5 .5 .5 .5 .5 .4 .5 .5 .5 .5 .3 .3 .4 .3 .4 .5 .6 .8 .7 .6 .7 .5 .6 .5 .4
.3 .4 .5 .4 .4 .5 .7 .7 .4 .6 .4 .5 .5 .4 .3 .3 .3 .5 .5 .5 .5 .8 .7 .5 .5 1.0 1.1 .9 .7 .6 .5 .5 .5 .4 .4 .4
.3 .5 .5 .4 .4 .4 .7 .7 .5 .5 .4 .5 .5 .5 .3 .4 .3 .6 .4 .5 .6 .7 .8 .8 .8 2.0 2.1 2.7 1.4 .6 .5 .6 .5 .5 .5 .4
.5 .6 .3 .3 .3 .3 .4 .8 .5 .5 .4 .4 .5 .6 .4 .4 .5 .7 .5 .7 .8 .7 .8 .9 .6 .5 1.5 1.1 .8 .5 .5 .4 .4 .4 .3 .3
.3 .4 .5 .4 .4 .4 .3 .4 .5 .5 .5 .4 .5 .4 .3 .3 .6 .9 .5 .7 .7 .9 1.0 .5 .2 .4 .4 .5 .4 .4 .7 .6 .5 .4 .5 .3
.3 .4 .5 .6 .6 .5 .4 .4 .4 .5 .8 .7 .6 .4 .6 .6 .7 .4 .9 .9 .9 1.1 .8 .4 .3 .4 .4 .7 .6 .8 .7 .4 .4 .5 .5 .5
.5 .4 .3 .2 .2 .3 .3 .3 .3 .3 .9 .8 1.0 .8 .4 .2 .2 .3 .3 .9 1.2 .9 .3 .4 .4 .4 .7 .7 .7 .6 .7 .8 .8 .6 .4 .3
1.0 .9 .6 .5 .4 .3 .3 .3 .3 .2 1.6 2.2 1.4 1.0 .4 .2 .2 .3 .3 .8 1.2 .8 .5 .3 .3 .3 .6 .4 .3 .3 .7 .8 .5 .3 .3 .5
.6 .3 .3 .3 .4 .4 .3 .3 .3 .2 .5 2.0 1.1 .6 .5 .4 .3 .2 .2 .8 1.2 .7 .5 .3 .3 .3 .3 .3 .3 .6 1.0 1.1 .8 .5 .2 .4
.5 .3 .3 .3 .3 .3 .3 .3 .3 .3 .6 1.1 .9 .4 .4 .4 .3 .2 .2 .4 .7 .5 .3 .3 .3 .3 .3 .3 .3 .4 .5 .6 .6 .4 .3 .4
.3 .4 .4 .3 .3 .3 .3 .3 .3 .3 .6 .6 .4 .3 .3 .3 .3 .3 .3 .4 .3 .4 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3 .4 .3 .4 .4
.3 .4 .4 .4 .4 .4 .5 .4 .4 .5 .5 .5 .4 .3 .4 .4 .5 .5 .4 .5 .5 .4 .4 .4 .5 .5 .4 .4 .4 .4 .4 .4 .3 .3 .4 .4
.4 .5 .5 .5 .5 .6 .6 .6 .6 .5 .5 .9 .6 .6 .6 .5 .5 .5 .4 .5 .4 .5 .8 1.3 .9 .7 1.1 1.3 1.2 1.0 1.1 1.1 .8 .7 .6 .5
.7 .7 .8 .9 1.2 1.5 1.2 1.0 1.1 1.0 1.0 1.1 .7 .6 .7 1.1 1.5 2.3 2.7 3.0 3.0 2.9 2.7 2.6 2.3 2.1 2.6 3.2 2.9 2.8 2.7 2.0 1.8 1.7 1.1 .8
1.0 .8 1.2 1.3 1.2 1.1 1.2 1.4 1.4 1.0 .8 .8 .9 .9 .9 1.1 1.1 1.2 1.4 1.7 1.8 2.0 2.2 2.4 2.4 2.5 2.5 2.5 2.4 2.0 1.7 1.5 1.4 1.7 1.2 1.0

Figure 53. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2001

Channel: AMSUA-9 (100 hPa)

NOAA16, using all observations

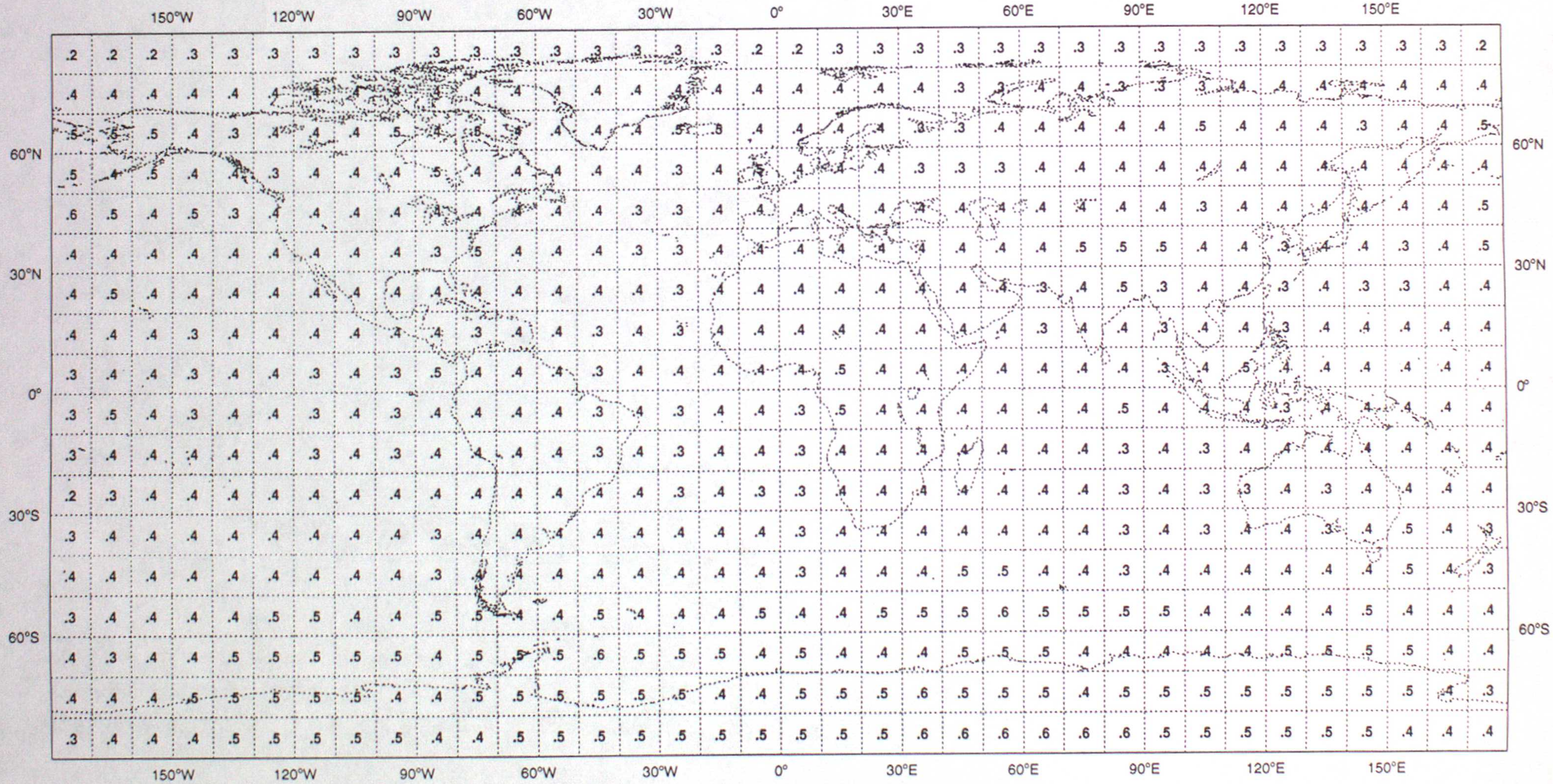

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
.2 .2 .2 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .2 .2 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .2
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .4 .4 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4
.5 .5 .5 .4 .3 .4 .4 .4 .5 .4 .6 .4 .4 .4 .4 .5 .5 .4 .4 .4 .4 .3 .3 .4 .4 .4 .4 .4 .5 .4 .4 .4 .3 .4 .4 .5
.5 .4 .5 .4 .4 .3 .4 .4 .4 .5 .4 .4 .4 .4 .4 .3 .4 .5 .4 .4 .4 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.6 .5 .4 .5 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .5
.4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .5 .4 .4 .4 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .5 .5 .4 .4 .3 .4 .4 .3 .4 .5
.4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .5 .3 .4 .4 .3 .4 .3 .3 .4 .4
.4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .3 .4 .4 .3 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .3 .4 .4 .3 .4 .4 .4 .4 .4
.3 .4 .4 .3 .4 .4 .3 .4 .3 .5 .4 .4 .4 .3 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .4 .4 .4 .3 .4 .5 .4 .4 .4 .4 .4 .4
.3 .5 .4 .3 .4 .4 .3 .4 .3 .4 .4 .4 .4 .3 .4 .3 .4 .4 .3 .5 .4 .4 .4 .4 .4 .4 .5 .4 .4 .4 .3 .4 .4 .4 .4 .4
.3 .4 .4 .4 .4 .4 .3 .4 .3 .4 .4 .4 .4 .3 .4 .3 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .3 .4 .3 .4 .4 .4 .4 .4 .4 .4
.2 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .3 .3 .4 .4 .4 .4 .4 .4 .4 .3 .4 .3 .3 .4 .3 .4 .4 .4 .4
.3 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .3 .4 .3 .4 .4 .3 .4 .5 .4 .3
.4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .5 .5 .4 .4 .3 .4 .4 .4 .4 .4 .4 .5 .4 .3
.3 .4 .4 .4 .4 .5 .5 .4 .4 .5 .5 .4 .4 .5 .4 .4 .4 .5 .4 .4 .5 .5 .5 .6 .5 .5 .5 .5 .4 .4 .4 .4 .5 .4 .4 .4
.4 .3 .4 .4 .5 .5 .5 .5 .5 .4 .5 .5 .5 .6 .5 .5 .5 .4 .5 .4 .4 .4 .5 .5 .5 .4 .4 .4 .4 .4 .5 .5 .5 .5 .4 .4
.4 .4 .4 .5 .5 .5 .5 .5 .4 .4 .5 .5 .5 .5 .5 .5 .4 .4 .5 .5 .5 .6 .5 .5 .5 .4 .5 .5 .5 .5 .5 .5 .5 .5 .4 .3
.3 .4 .4 .4 .5 .5 .5 .5 .5 .4 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .6 .6 .6 .6 .6 .6 .5 .5 .5 .5 .5 .5 .4 .4 .4

Figure 54. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2001
Channel: AMSUA-9 (100 hPa)
NOAA16, using all observations

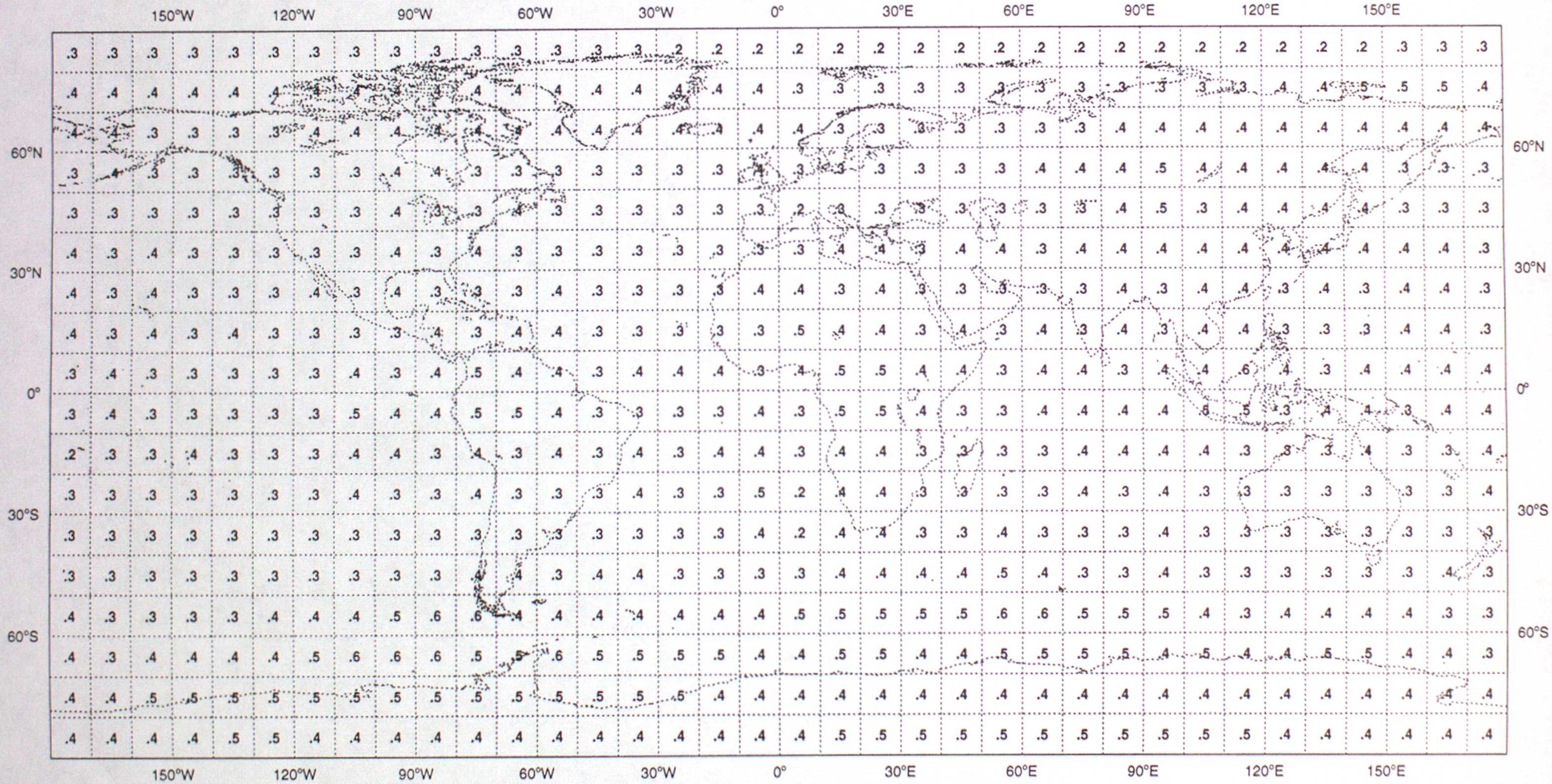

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

TABLE 8

MONTHLY MONITORING OF MARINE SURFACE OBSERVATIONS (COSNA)
DATA TYPE:- DRIFTER
MONITORING CENTRE: BRACKNELL
MONTH: November 2001

Monitoring procedures
Period :One calendar month.

Data monitored :Reports from each unique identifier for drifting buoy.

Area monitored :10°N - 80°N, 85°W - 0°W

Standard of comparison :Background field from UKMO global model.

Position :Average latitude and longitude for period.

Observation times :All hours combined.

Elements monitored :Mean sea-level pressure (hPa)
:Wind speed (m s^{-1})
:Wind direction (degrees)

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. A positive bias indicates the wind observation is veered to the background

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors

GROSS ERROR LIMITS :15 hPa (pressure)
:25 m s^{-1} (Vector Wind)

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
12518	40.1	-15.3	ALL	P	SUR	1	0	0	0.0	-0.7	0.7
15581	57.8	-24.3	ALL	P	SUR	1	0	0	0.0	0.1	0.1
40656	32.3	-79.6	ALL	P	SUR	1	0	0	0.0	1.3	1.3
41523	32.2	-47.6	ALL	P	SUR	391	0	0	1.3	0.6	1.4
41552	20.8	-46.0	ALL	P	SUR	624	0	0	0.7	-0.9	1.2
41553	19.3	-62.8	ALL	P	SUR	637	0	0	0.6	-0.2	0.6
41554	21.3	-64.3	ALL	P	SUR	638	0	0	0.6	-0.4	0.7
41556	16.6	-60.6	ALL	P	SUR	627	0	0	0.6	-0.3	0.7
41557	20.4	-55.8	ALL	P	SUR	637	0	0	0.7	-0.3	0.8
41559	17.5	-55.9	ALL	P	SUR	626	0	0	0.7	-0.4	0.8
41560	14.3	-51.5	ALL	P	SUR	585	0	0	0.6	-0.5	0.8
41561	17.8	-53.7	ALL	P	SUR	616	0	0	0.7	-0.7	0.9
41563	14.1	-39.9	ALL	P	SUR	596	0	0	0.6	-0.4	0.7
41639	28.1	-59.4	ALL	P	SUR	195	0	0	1.9	1.4	2.4
41642	24.3	-66.7	ALL	P	SUR	275	0	0	1.3	0.4	1.4
41645	30.0	-78.0	ALL	P	SUR	630	0	0	0.8	1.1	1.4
41646	27.9	-77.9	ALL	P	SUR	613	0	0	1.0	0.6	1.1
41647	24.2	-70.8	ALL	P	SUR	616	0	0	0.8	0.2	0.8
41648	23.1	-73.2	ALL	P	SUR	776	0	0	0.8	0.4	0.8
41650	22.6	-72.4	ALL	P	SUR	620	0	0	0.7	0.7	1.0
41651	24.3	-75.4	ALL	P	SUR	653	0	0	1.0	0.7	1.2
41652	29.3	-63.6	ALL	P	SUR	798	0	0	1.3	-0.2	1.3
41655	31.4	-80.3	ALL	P	SUR	604	0	0	0.7	0.4	0.8
41656	32.3	-79.6	ALL	P	SUR	607	1	0	0.9	0.6	1.0
41657	37.0	-73.0	ALL	P	SUR	593	0	0	0.7	0.3	0.8
41658	39.1	-65.5	ALL	P	SUR	605	0	0	0.8	-0.6	1.0
41659	36.5	-75.3	ALL	P	SUR	612	0	0	0.6	1.3	1.4
42518	41.1	-14.7	ALL	P	SUR	1	0	0	0.0	0.5	0.5
44545	61.6	-26.4	ALL	P	SUR	1	0	0	0.0	-1.7	1.7
44546	62.1	-22.1	ALL	P	SUR	1401	0	0	1.2	-0.6	1.3
44548	51.7	-15.0	ALL	P	SUR	680	0	0	0.7	0.3	0.7
44549	51.7	-35.3	ALL	P	SUR	1211	0	0	1.4	0.3	1.4
44550	48.3	-35.0	ALL	P	SUR	1669	2	0	1.0	-0.2	1.1
44611	54.7	-34.1	ALL	P	SUR	1	0	0	0.0	2.0	2.0
44612	30.9	-26.0	ALL	P	SUR	893	0	0	0.6	-0.3	0.7
44613	29.3	-22.2	ALL	P	SUR	651	0	0	0.7	-0.1	0.7
44616	46.4	-39.3	ALL	P	SUR	1096	3	0	1.3	0.9	1.5
44621	54.8	-33.7	ALL	P	SUR	1328	1	0	1.0	0.2	1.0
44623	33.3	-25.7	ALL	P	SUR	988	0	0	0.7	0.2	0.7
44624	43.8	-43.4	ALL	P	SUR	687	1	0	1.4	0.1	1.4
44625	44.8	-55.7	ALL	P	SUR	1256	69	5	2.3	-1.0	2.5
44627	43.8	-42.2	ALL	P	SUR	970	9	1	1.3	-0.5	1.4
44628	44.7	-38.5	ALL	P	SUR	1	0	0	0.0	-0.4	0.4
44686	47.2	-39.5	ALL	P	SUR	1	0	0	0.0	0.1	0.1
44721	35.6	-30.1	ALL	P	SUR	918	0	0	1.0	0.0	1.0
44722	35.1	-34.6	ALL	P	SUR	194	85	44	0.7	-0.5	0.9
44723	49.6	-45.6	ALL	P	SUR	1196	0	0	1.2	-0.1	1.2
44726	57.0	-36.7	ALL	P	SUR	1340	1	0	1.6	0.3	1.6
44728	52.8	-47.3	ALL	P	SUR	1082	5	0	1.3	-0.5	1.4
44729	39.4	-14.3	ALL	P	SUR	878	0	0	0.6	0.6	0.8
44730	53.2	-42.8	ALL	P	SUR	1114	1	0	1.4	-0.2	1.4
44742	55.2	-36.3	ALL	P	SUR	992	6	1	1.4	1.3	1.9
44761	59.1	-5.9	ALL	P	SUR	1228	0	0	0.7	-0.2	0.8
44765	34.5	-31.0	ALL	P	SUR	569	1	0	0.9	-0.2	0.9
44771	58.1	-20.2	ALL	P	SUR	1015	0	0	1.2	0.3	1.2
44772	57.5	-21.4	ALL	P	SUR	1	0	0	0.0	0.5	0.5
44775	30.8	-38.2	ALL	P	SUR	927	0	0	1.7	-0.6	1.8
44776	57.2	-14.9	ALL	P	SUR	1290	0	0	0.8	-0.3	0.9
44778	41.9	-21.2	ALL	P	SUR	984	0	0	0.8	-0.1	0.8
44779	30.7	-38.4	ALL	P	SUR	1	0	0	0.0	-1.1	1.1

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
44807	43.5	-70.1	ALL	P	SUR	1	0	0	0.0	-0.1	0.1
44823	50.0	-46.2	ALL	P	SUR	1	0	0	0.0	0.6	0.6
44825	40.3	-73.2	ALL	P	SUR	1	0	0	0.0	-0.1	0.1
44946	61.9	-23.3	ALL	P	SUR	1	0	0	0.0	5.1	5.1
45749	45.5	-82.1	ALL	P	SUR	1	0	0	0.0	4.0	4.0
45808	44.3	-83.4	ALL	P	SUR	1	0	0	0.0	0.8	0.8
45832	42.5	-81.2	ALL	P	SUR	1	0	0	0.0	2.7	2.7
47556	74.0	-76.7	ALL	P	SUR	573	1	0	0.8	-0.1	0.8
47956	71.9	-71.9	ALL	P	SUR	1	0	0	0.0	-0.2	0.2
62501	31.8	-19.4	ALL	P	SUR	818	1	0	0.7	0.3	0.7
62503	31.8	-15.1	ALL	P	SUR	855	0	0	0.5	-0.4	0.7
62504	37.4	-22.7	ALL	P	SUR	1038	0	0	0.6	-0.2	0.7
62510	41.4	-17.8	ALL	P	SUR	24	15	63	1.5	-12.9	13.0
62511	38.7	-25.0	ALL	P	SUR	333	0	0	0.6	-0.4	0.7
62512	41.3	-17.1	ALL	P	SUR	1170	0	0	0.8	-0.8	1.2
62514	58.6	-6.6	ALL	P	SUR	824	2	0	1.0	-0.4	1.1
62516	47.3	-15.2	ALL	P	SUR	964	1	0	0.9	-0.2	0.9
62518	40.8	-15.1	ALL	P	SUR	880	0	0	1.0	-0.1	1.0
62519	43.8	-11.8	ALL	P	SUR	683	1	0	1.2	0.5	1.3
62520	53.5	-20.1	ALL	P	SUR	214	0	0	1.1	0.5	1.2
62553	24.4	-26.1	ALL	P	SUR	140	0	0	0.6	-0.2	0.6
62572	40.1	-14.1	ALL	P	SUR	1	0	0	0.0	-1.6	1.6
62596	60.7	-32.3	ALL	P	SUR	1303	0	0	1.3	-0.2	1.3
62598	54.8	-23.3	ALL	P	SUR	81	0	0	2.0	-1.2	2.3
62703	49.9	-2.9	ALL	P	SUR	1	0	0	0.0	1.6	1.6
62705	54.9	-12.6	ALL	P	SUR	1	0	0	0.0	-0.4	0.4
62707	50.1	-6.1	ALL	P	SUR	1	0	0	0.0	-1.0	1.0
62709	57.0	0.0	ALL	P	SUR	1	0	0	0.0	-1.0	1.0
62803	49.9	-2.9	ALL	P	SUR	1	0	0	0.0	0.4	0.4
62807	50.1	-6.1	ALL	P	SUR	1	0	0	0.0	-0.7	0.7
62829	48.7	-12.4	ALL	P	SUR	1	0	0	0.0	-0.7	0.7
64549	64.1	-33.4	ALL	P	SUR	1537	80	5	2.3	-1.0	2.5
64550	63.8	-28.3	ALL	P	SUR	987	5	1	1.8	-0.7	2.0
64551	60.8	-26.3	ALL	P	SUR	142	0	0	2.6	-2.2	3.4
64845	59.1	-11.4	ALL	P	SUR	2	0	0	0.3	0.2	0.4
64846	60.7	-5.2	ALL	P	SUR	1	0	0	0.0	0.1	0.1
65516	62.9	-28.3	ALL	P	SUR	2280	9	0	1.3	-0.2	1.3
65581	59.0	-24.0	ALL	P	SUR	1427	13	1	1.4	-0.6	1.5
65595	59.5	-25.7	ALL	P	SUR	1320	11	1	1.3	-0.3	1.3
65601	62.5	-19.5	ALL	P	SUR	1	0	0	0.0	-0.9	0.9
65602	61.9	-22.8	ALL	P	SUR	1663	23	1	1.6	-0.8	1.8
65662	60.8	-28.1	ALL	P	SUR	1478	16	1	1.3	-0.3	1.3
WIND SPEED											
41523	32.2	-47.6	ALL	SPEED	SUR	7	0	0	2.9	-8.4	8.9
41552	20.8	-46.0	ALL	SPEED	SUR	621	2	0	2.7	0.4	2.7
41553	19.3	-62.8	ALL	SPEED	SUR	624	4	1	2.4	1.8	2.9
41554	21.3	-64.3	ALL	SPEED	SUR	621	1	0	2.3	0.6	2.4
41556	16.6	-60.6	ALL	SPEED	SUR	621	1	0	2.8	2.0	3.4
41557	20.4	-55.8	ALL	SPEED	SUR	629	3	0	1.9	0.2	1.9
41559	17.5	-55.9	ALL	SPEED	SUR	616	1	0	1.8	0.9	2.0
41560	14.3	-51.5	ALL	SPEED	SUR	579	2	0	2.6	0.7	2.7
41561	17.8	-53.7	ALL	SPEED	SUR	614	2	0	2.5	1.0	2.7
41563	14.1	-39.9	ALL	SPEED	SUR	591	0	0	1.5	-0.1	1.5
41645	30.0	-78.0	ALL	SPEED	SUR	624	1	0	2.8	1.2	3.1
41646	27.9	-77.9	ALL	SPEED	SUR	606	1	0	2.5	1.5	2.9
41647	24.2	-70.8	ALL	SPEED	SUR	609	0	0	2.5	1.3	2.8
41648	23.1	-73.2	ALL	SPEED	SUR	774	4	1	2.1	1.2	2.5
41650	22.6	-72.4	ALL	SPEED	SUR	616	0	0	2.0	0.3	2.1
41651	24.3	-75.4	ALL	SPEED	SUR	116	0	0	2.3	-9.5	9.8
41652	29.3	-63.6	ALL	SPEED	SUR	783	6	1	2.7	0.8	2.8

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
WIND SPEED											
44625	44.8	-55.7	ALL	SPEED	SUR	1	0	0	0.0	12.0	12.0
44740	43.7	-51.7	ALL	SPEED	SUR	1	0	0	0.0	0.8	0.8
44825	40.3	-73.2	ALL	SPEED	SUR	1	0	0	0.0	-3.4	3.4
62501	31.8	-19.4	ALL	SPEED	SUR	1	0	0	0.0	-4.0	4.0
62520	53.5	-20.1	ALL	SPEED	SUR	212	0	0	3.1	0.1	3.1
62553	24.4	-26.1	ALL	SPEED	SUR	406	0	0	1.4	-0.9	1.7
62572	40.1	-14.1	ALL	SPEED	SUR	346	0	0	1.1	0.2	1.1
62703	49.9	-2.9	ALL	SPEED	SUR	1	0	0	0.0	1.5	1.5
62705	54.9	-12.6	ALL	SPEED	SUR	1	0	0	0.0	-1.5	1.5
62707	50.1	-6.1	ALL	SPEED	SUR	2	0	0	0.2	0.9	0.9
62803	49.9	-2.9	ALL	SPEED	SUR	1	0	0	0.0	0.6	0.6
62807	50.1	-6.1	ALL	SPEED	SUR	1	0	0	0.0	-3.3	3.3
64845	59.1	-11.4	ALL	SPEED	SUR	2	1	50	0.0	1.3	1.3
64846	60.7	-5.2	ALL	SPEED	SUR	1	0	0	0.0	-1.1	1.1
65662	60.8	-28.1	ALL	SPEED	SUR	1	1	100			
WIND DIRECTION											
41523	32.2	-47.6	ALL	DIRN.	SUR	2	0	0	0.1	-60.6	60.6
41552	20.8	-46.0	ALL	DIRN.	SUR	265	2	1	21.6	-4.2	22.0
41553	19.3	-62.8	ALL	DIRN.	SUR	269	4	1	15.4	2.9	15.7
41554	21.3	-64.3	ALL	DIRN.	SUR	485	1	0	19.5	-13.6	23.8
41556	16.6	-60.6	ALL	DIRN.	SUR	155	1	1	17.8	2.9	18.1
41557	20.4	-55.8	ALL	DIRN.	SUR	286	3	1	18.6	-10.1	21.1
41559	17.5	-55.9	ALL	DIRN.	SUR	130	1	1	20.1	-2.1	20.2
41560	14.3	-51.5	ALL	DIRN.	SUR	158	2	1	12.8	13.5	18.6
41561	17.8	-53.7	ALL	DIRN.	SUR	145	2	1	20.2	-7.3	21.5
41563	14.1	-39.9	ALL	DIRN.	SUR	288	0	0	14.4	12.6	19.1
41645	30.0	-78.0	ALL	DIRN.	SUR	383	1	0	15.5	7.4	17.2
41646	27.9	-77.9	ALL	DIRN.	SUR	380	1	0	13.2	-5.3	14.2
41647	24.2	-70.8	ALL	DIRN.	SUR	523	0	0	15.1	-1.4	15.2
41648	23.1	-73.2	ALL	DIRN.	SUR	635	4	1	15.9	24.2	29.0
41650	22.6	-72.4	ALL	DIRN.	SUR	482	0	0	15.3	-5.5	16.2
41651	24.3	-75.4	ALL	DIRN.	SUR	6	0	0	10.8	-1.8	10.9
41652	29.3	-63.6	ALL	DIRN.	SUR	581	6	1	15.8	-4.2	16.3
44625	44.8	-55.7	ALL	DIRN.	SUR	1	0	0	0.0	50.0	50.0
44740	43.7	-51.7	ALL	DIRN.	SUR	1	0	0	0.0	-1.3	1.3
62501	31.8	-19.4	ALL	DIRN.	SUR	1	0	0	0.0	-30.7	30.7
62520	53.5	-20.1	ALL	DIRN.	SUR	180	0	0	20.5	-36.6	42.0
62553	24.4	-26.1	ALL	DIRN.	SUR	313	0	0	12.5	-5.0	13.5
62572	40.1	-14.1	ALL	DIRN.	SUR	332	0	0	9.6	3.8	10.3
62703	49.9	-2.9	ALL	DIRN.	SUR	1	0	0	0.0	1.0	1.0
62705	54.9	-12.6	ALL	DIRN.	SUR	1	0	0	0.0	-20.8	20.8
62707	50.1	-6.1	ALL	DIRN.	SUR	1	0	0	0.0	9.5	9.5
62803	49.9	-2.9	ALL	DIRN.	SUR	1	0	0	0.0	-32.0	32.0
64845	59.1	-11.4	ALL	DIRN.	SUR	2	1	50	0.0	4.5	4.5
64846	60.7	-5.2	ALL	DIRN.	SUR	1	0	0	0.0	18.0	18.0
65662	60.8	-28.1	ALL	DIRN.	SUR	1	1	100			

TABLE 9

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: November 2001

Monitoring procedures:

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :40°N - 70°N, 60°W - 0°W.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :300.0 - 150.0 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored :N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & vector wind.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP $\geq$ 20

NB : All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	787	3	10	2.6	0.4	777	0	5	0	8.4	0.8
ACA	1006	0	4	1.5	-0.2	1019	0	5	0	7.1	0.6
AEA	186	1	2	1.4	0.3	189	0	2	0	6.8	0.8
AEL	171	1	11	1.9	-0.9	176	0	11	0	7.6	-0.8
AEY	24	0	4	1.6	1.3	24	0	4	0	4.2	-1.3
AFL	432	1	3	1.6	0.3	433	1	4	0	8.0	0.1
AFR	786	1	9	1.6	0.0	801	0	8	0	7.3	0.7
AIH	135	0	2	1.4	0.1	139	0	4	0	9.1	0.4
AJM	135	0	1	1.4	-0.1	135	0	2	0	8.2	1.4
AMM	57	0	5	1.0	0.5	59	0	10	0	9.7	0.4
AMT	20	5	10	2.1	0.3	20	0	10	0	8.4	1.6
AMX	242	2	7	2.1	0.3	247	1	6	0	10.7	0.5
AZA	397	5	42	2.4	0.6	407	0	7	0	9.4	0.8
BAL	131	0	14	1.1	0.0	134	0	15	0	7.0	0.6
BAW	515	1	9	1.8	-0.7	516	0	9	0	7.0	0.5
BWA	50	0	6	2.2	1.6	52	0	12	0	10.0	0.3
CFG	455	0	4	1.5	-0.6	456	0	4	0	6.9	0.1
CLX	309	0	1	1.6	-0.4	315	1	4	0	7.6	0.0
CMM	43	0	12	1.6	-0.2	45	0	11	0	4.7	0.8
COA	162	0	6	1.4	-0.5	162	0	7	0	8.0	-0.2
CRL	145	1	2	1.3	0.3	151	0	1	0	7.2	0.3
CUB	126	0	5	1.8	0.9	126	0	5	0	8.8	0.0
DAL	768	0	14	1.4	-0.4	803	0	15	0	7.9	0.2
DCE	59	2	14	1.3	0.6	63	0	16	0	6.0	-0.6
DLH	1007	0	9	1.5	0.2	1020	0	10	0	6.8	0.6
EDW	44	0	2	1.1	-0.3	47	0	2	0	5.0	1.7
EEZ	34	0	6	1.4	0.8	37	0	14	0	7.6	0.6
EIA	132	0	2	1.7	-0.3	136	0	79	0	18.0	3.9
ELY	96	2	7	1.4	0.4	104	0	8	0	7.7	0.8
EWW	107	0	5	1.6	0.3	108	0	4	0	6.4	1.4
FDX	645	1	38	1.5	0.2	656	0	38	0	8.2	0.3
FIN	278	0	4	1.7	0.1	283	1	6	0	8.5	0.4
GAF	38	5	16	1.9	-0.6	38	0	16	0	7.1	0.3
GCO	113	0	2	2.0	0.3	112	0	100	0	18.8	1.0
GRL	48	0	2	1.4	0.1	49	0	4	0	10.2	-0.5
GTI	203	0	8	1.7	-0.1	202	0	8	0	8.5	0.9
IBE	1175	1	8	1.7	0.5	1163	0	8	0	7.5	0.3
ICE	844	0	2	1.5	0.0	840	0	3	0	7.8	0.8
JKK	34	0	0	1.3	0.0	31	0	3	0	10.4	-1.7
JMC	38	5	11	1.4	0.1	37	0	5	0	6.2	1.2
KLM	1082	0	4	1.6	0.0	1101	0	5	0	7.6	0.0
LDA	38	0	13	1.4	0.0	38	0	16	0	7.5	0.0
LDI	204	1	42	2.6	1.4	204	0	3	0	6.8	0.1
LIB	341	2	11	1.4	0.6	350	0	13	0	9.4	0.2
LOT	82	1	7	1.9	-1.3	82	0	6	0	6.0	0.5
LTU	541	0	6	1.5	0.1	548	0	5	0	6.9	1.1
MPD	84	1	6	1.5	-0.3	84	0	7	0	8.2	0.5
MPH	454	0	1	1.6	-0.8	464	1	3	0	7.9	0.6
NCA	21	0	0	0.9	0.2	21	0	0	0	6.5	-2.3
NWA	2735	0	1	1.5	0.4	2776	0	2	0	7.0	0.5
PAC	126	2	6	1.4	-0.1	130	1	7	0	8.6	-0.5
RAM	24	0	0	1.9	-1.3	24	0	4	0	9.0	-0.1
RCH	408	1	100	2.0	0.0	403	0	100	0	15.0	2.0
RZO	44	9	11	1.0	-0.5	44	0	5	0	7.6	0.6
SLR	98	1	10	1.0	0.4	104	0	14	0	7.4	-1.0
SVA	31	0	6	2.0	0.2	31	3	10	0	7.7	-0.5
TAG	28	0	7	2.9	1.2	28	0	4	0	8.3	0.2
TAP	239	1	4	1.7	0.1	239	0	4	0	8.1	1.5
TSC	55	0	0	1.8	0.3	57	0	2	0	6.7	1.0

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
UAL	449	0	100	1.7	-0.4	466	0	100	0	6.5	0.6
UPS	1063	1	40	1.7	0.2	1067	0	40	0	8.4	-0.1
USA	129	1	1	1.1	-0.2	116	0	1	0	6.5	0.5
VIR	284	0	2	1.6	-0.1	291	0	3	0	7.6	0.8
VKG	22	0	0	1.7	-0.1	22	0	0	0	3.5	0.2
WOA	151	1	2	1.3	0.2	160	0	7	0	9.3	1.3
EU	23085	0	25	1.3	0.1	23085	0	24	0	4.7	0.4
KL	1790	0	22	1.4	1.0	1786	0	22	0	4.9	0.6
LH	511	0	8	1.2	0.7	510	0	8	0	4.6	0.7
TN	36	6	8	2.1	0.4	38	0	5	0	11.6	1.3
N	355	1	2	2.2	0.7	365	1	3	0	7.8	1.0
US ACARS	22586	13	36	1.2	0.2	22586	0	25	0	5.2	0.5

TABLE 10

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: November 2001

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DBLK	12	Z	100	12	0	12.4	38.0	35.9
ELML7	00	Z	100	19	0	9.5	31.7	30.3
ELML7	12	Z	100	20	0	14.0	43.9	41.5
FNOR	00	Z	100	4	0	11.9	31.3	29.0
FNOR	12	Z	100	6	0	7.4	18.2	16.7
FNOU	00	Z	100	11	0	10.3	36.8	35.3
FNOU	12	Z	100	11	0	11.5	29.5	27.2
FNPH	00	Z	100	12	0	16.5	28.2	22.8
FNPH	12	Z	100	7	0	42.2	53.4	32.7
FNRS	00	Z	100	10	0	13.3	22.5	18.1
FNRS	12	Z	100	11	0	9.7	25.1	23.2
LDWR	00	Z	100	29	0	12.4	22.3	-18.5
LDWR	12	Z	100	28	0	12.2	23.0	-19.5
OVYA2	00	Z	100	7	0	12.7	20.7	-16.4
OVYA2	12	Z	100	8	0	9.1	17.5	-14.9
OXYH2	00	Z	100	4	0	44.5	60.7	-41.3
OXYH2	12	Z	100	4	0	15.2	29.5	-25.3
SWJS	12	Z	100	3	0	2.2	26.1	26.0
V2XO	00	Z	100	2	0	18.5	20.4	8.5
V2XO	12	Z	100	1	0	0.0	17.0	17.0
WPKD	00	Z	100	7	0	5.6	16.0	15.0
WPKD	12	Z	100	7	1	11.6	14.5	8.7
ZCBP6	00	Z	100	5	0	17.2	17.6	-3.8
ZCBP6	12	Z	100	9	0	24.4	29.6	16.7
03953	00	Z	100	29	0	15.4	29.1	24.7
03953	12	Z	100	29	0	13.8	28.6	25.0
04018	00	Z	100	29	0	22.4	22.9	4.5
04018	12	Z	100	26	0	14.5	14.6	2.1
04220	00	Z	100	26	0	11.0	24.8	-22.2
04220	12	Z	100	25	0	10.4	26.7	-24.6
04270	00	Z	100	28	0	26.9	28.5	-9.4
04270	12	Z	100	28	0	26.4	29.3	-12.6
04339	00	Z	100	28	0	8.7	14.1	-11.1
04339	12	Z	100	28	0	11.2	20.0	-16.6
04360	00	Z	100	24	0	13.2	20.1	-15.2
04360	12	Z	100	24	0	14.9	23.6	-18.3
08001	00	Z	100	25	0	20.0	20.4	4.3
08001	12	Z	100	26	0	23.6	23.8	-3.3
08508	00	Z	100	18	0	24.4	36.2	26.7
08508	12	Z	100	28	0	11.1	29.5	27.3
08522	00	Z	100	29	0	9.3	27.8	26.2
08522	12	Z	100	29	0	15.8	36.4	32.8
08594	12	Z	100	19	0	13.0	48.0	46.3
60020	00	Z	100	28	0	13.1	35.6	33.1
60020	12	Z	100	25	0	14.5	34.7	31.6
71600	00	Z	100	29	0	15.7	15.8	2.4
71600	12	Z	100	27	0	17.1	17.2	-2.4
72201	00	Z	100	28	0	10.6	34.7	33.0
72201	12	Z	100	29	0	13.3	42.1	39.9
72402	00	Z	100	29	0	15.6	41.8	38.8
72402	12	Z	100	28	0	15.0	37.6	34.4
74494	00	Z	100	24	0	11.8	16.6	11.7
74494	12	Z	100	25	0	12.6	13.4	4.4
78016	00	Z	100	28	0	15.0	36.1	32.9
78016	12	Z	100	29	0	10.2	32.1	30.5

TABLE 11

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: November 2001

Monitoring procedures:

Period :One calendar month.

Data monitored :Reports from selected radiosonde TEMPs.

Area monitored :0°N - 90°N, 100°W - 40°E

Standard of comparison :Background field from UKMO global model.

Position :Average latitude and longitude for period.

Observation times :00, 12 UTC.

Level monitored :500 hPa.

Element monitored :GEOPOTENTIAL HEIGHT in metres

Parameters monitored :NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:SD :SD of difference of observations from background values at level shown excluding those with gross errors.

:BIAS :Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DBLK	12	Z	500	12	0	5.0	8.8	7.2
ELML7	00	Z	500	20	0	9.5	9.6	1.1
ELML7	12	Z	500	21	0	8.2	8.7	3.0
FNOR	00	Z	500	4	0	10.2	10.4	2.0
FNOR	12	Z	500	6	0	10.3	15.5	11.5
FNOU	00	Z	500	12	0	4.6	9.1	7.8
FNOU	12	Z	500	11	0	9.0	13.4	10.0
FNPH	00	Z	500	12	0	8.1	8.6	2.7
FNPH	12	Z	500	11	0	31.0	32.3	9.2
FNRS	00	Z	500	10	0	8.3	8.3	-0.8
FNRS	12	Z	500	11	0	5.7	6.8	3.6
LDWR	00	Z	500	29	0	10.5	11.3	-4.0
LDWR	12	Z	500	28	0	15.3	15.5	-1.9
OVYA2	00	Z	500	7	0	13.5	13.9	-3.0
OVYA2	12	Z	500	8	0	6.7	10.3	-7.9
OXYH2	00	Z	500	4	0	45.6	49.5	-19.3
OXYH2	12	Z	500	4	0	3.9	14.1	-13.5
SWJS	12	Z	500	4	0	13.4	18.3	12.5
V2XO	00	Z	500	4	0	10.2	10.2	-1.0
V2XO	12	Z	500	1	0	0.0	2.0	-2.0
WPKD	00	Z	500	8	0	6.5	7.5	-3.8
WPKD	12	Z	500	7	1	9.7	10.0	-2.4
ZCBP6	00	Z	500	6	0	8.9	9.5	-3.2
ZCBP6	12	Z	500	9	0	15.4	15.5	-1.8
03953	00	Z	500	29	0	8.8	14.3	11.3
03953	12	Z	500	29	0	8.5	17.0	14.8
04018	00	Z	500	29	0	8.9	14.5	11.4
04018	12	Z	500	28	0	10.1	11.0	4.4
04220	00	Z	500	26	0	7.3	7.3	-1.0
04220	12	Z	500	28	0	9.4	10.2	-4.0
04270	00	Z	500	29	0	11.6	11.9	2.5
04270	12	Z	500	29	0	11.4	11.6	-1.8
04339	00	Z	500	29	0	10.9	13.5	8.0
04339	12	Z	500	29	0	13.4	13.6	1.9
04360	00	Z	500	24	0	15.1	15.1	-1.2
04360	12	Z	500	27	0	13.5	14.0	-3.8
08001	00	Z	500	27	0	11.1	11.2	1.3
08001	12	Z	500	28	0	12.5	12.8	3.0
08508	00	Z	500	19	0	17.9	18.1	2.7
08508	12	Z	500	28	0	9.7	10.1	3.0
08522	00	Z	500	29	0	7.8	9.1	4.6
08522	12	Z	500	29	0	8.8	10.8	6.3
08594	12	Z	500	21	0	5.5	5.5	1.0
60020	00	Z	500	28	0	9.9	10.7	4.1
60020	12	Z	500	26	0	6.4	7.7	4.3
71600	00	Z	500	29	0	10.3	13.5	-8.8
71600	12	Z	500	27	0	13.6	16.5	-9.4
72201	00	Z	500	29	0	6.5	9.7	7.3
72201	12	Z	500	29	0	5.6	6.3	2.9
72402	00	Z	500	29	0	9.2	10.7	5.4
72402	12	Z	500	29	0	8.3	8.8	2.9
74494	00	Z	500	25	0	7.3	7.4	0.7
74494	12	Z	500	26	0	9.9	9.9	0.3
78016	00	Z	500	28	0	17.0	21.0	12.3
78016	12	Z	500	29	0	8.6	14.3	11.5

TABLE 12

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: November 2001

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DBLK	12	V	100	12	0	0	7.2	0.7	-1.6
ELML7	00	V	100	17	0	0	6.9	1.8	0.8
ELML7	12	V	100	20	0	0	6.4	1.1	0.5
FNOR	00	V	100	5	0	0	3.7	0.2	-0.3
FNOR	12	V	100	5	0	0	4.5	-0.8	2.5
FNOU	00	V	100	9	0	0	3.6	-0.6	1.5
FNOU	12	V	100	11	0	0	3.7	-0.7	1.4
FNPH	00	V	100	9	0	0	3.5	-0.3	0.4
FNPH	12	V	100	6	0	0	4.0	-1.1	1.5
FNRS	00	V	100	10	0	0	4.3	2.0	0.3
FNRS	12	V	100	9	0	0	6.3	-0.2	0.3
LDWR	00	V	100	29	0	0	4.9	-0.8	-2.1
LDWR	12	V	100	28	0	0	5.4	0.3	-1.9
OVYA2	00	V	100	4	0	0	5.3	2.6	1.0
OVYA2	12	V	100	4	0	0	3.4	-0.4	1.4
OXYH2	00	V	100	4	0	0	3.7	0.8	0.8
OXYH2	12	V	100	4	0	0	2.5	-0.2	0.3
SWJS	12	V	100	3	0	0	3.0	0.1	-1.6
V2XO	00	V	100	2	0	0	3.9	2.3	-1.9
V2XO	12	V	100	1	0	0	2.4	2.0	1.3
WPKD	00	V	100	5	0	0	4.9	0.3	-1.7
WPKD	12	V	100	7	0	0	4.1	0.1	-1.3
ZCBP6	00	V	100	4	0	0	3.9	-0.4	-0.8
ZCBP6	12	V	100	7	0	0	4.3	-0.2	-0.2
03953	00	V	100	25	0	0	4.3	1.6	0.4
03953	12	V	100	28	0	0	3.7	1.3	0.1
04018	00	V	100	29	0	0	4.6	1.9	-1.4
04018	12	V	100	25	0	0	5.2	0.0	-0.9
04220	00	V	100	25	0	0	3.7	0.4	0.3
04220	12	V	100	25	0	0	3.5	0.4	0.5
04270	00	V	100	27	0	11	9.1	-0.7	1.0
04270	12	V	100	28	0	7	8.1	-0.7	1.5
04339	00	V	100	28	0	0	5.5	1.3	-0.8
04339	12	V	100	28	0	0	6.1	3.5	-1.4
04360	00	V	100	24	0	0	4.5	0.2	-0.4
04360	12	V	100	22	0	9	9.1	-1.0	1.0
08001	00	V	100	24	0	0	4.3	1.0	-0.2
08001	12	V	100	26	0	0	4.0	-0.7	-0.1
08508	00	V	100	5	0	0	3.6	-0.4	1.5
08508	12	V	100	14	0	0	4.1	2.2	0.9
08522	00	V	100	27	0	0	4.5	1.9	0.5
08522	12	V	100	29	0	0	4.5	0.4	1.0
08594	12	V	100	20	0	100	4.4	-0.7	1.3
60020	00	V	100	27	0	0	5.8	2.7	1.4
60020	12	V	100	23	0	0	3.6	0.4	0.6
71600	00	V	100	29	0	0	3.9	0.0	0.3
71600	12	V	100	27	0	0	4.2	0.9	1.0
72201	00	V	100	28	0	0	5.1	-0.1	1.2
72201	12	V	100	29	0	3	9.3	0.7	1.3
72402	00	V	100	29	0	0	4.2	0.9	-0.5
72402	12	V	100	28	0	0	4.0	1.8	0.1
74494	00	V	100	23	0	0	3.5	-0.2	0.2
74494	12	V	100	25	0	0	3.4	0.1	0.8
78016	00	V	100	27	0	0	4.8	1.4	-1.4
78016	12	V	100	28	0	0	4.6	0.9	0.5

TABLE 13

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: November 2001

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS:	Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DBLK	12	V	500	12	0	0	4.2	-0.5	-0.4
ELML7	00	V	500	20	0	0	5.5	-0.4	1.6
ELML7	12	V	500	21	0	0	4.9	0.5	-0.5
FNOR	00	V	500	4	0	0	4.0	0.6	0.7
FNOR	12	V	500	5	0	0	4.4	1.8	0.1
FNOU	00	V	500	7	0	0	3.4	-0.8	-0.6
FNOU	12	V	500	10	0	0	3.7	0.9	1.0
FNPH	00	V	500	10	0	0	3.9	-1.4	-0.1
FNPH	12	V	500	7	0	0	3.2	0.2	-0.4
FNRS	00	V	500	10	0	0	4.5	-0.2	-0.9
FNRS	12	V	500	9	0	0	5.8	1.0	-0.1
LDWR	00	V	500	29	0	0	5.8	0.2	-1.0
LDWR	12	V	500	28	0	0	5.8	0.5	0.9
OVYA2	00	V	500	4	0	0	2.4	-0.2	0.2
OVYA2	12	V	500	4	0	0	3.4	1.4	-0.8
OXYH2	00	V	500	4	0	0	4.9	-2.3	-0.6
OXYH2	12	V	500	4	0	0	4.1	-0.9	2.9
SWJS	12	V	500	4	0	0	2.2	0.9	0.8
V2XO	00	V	500	3	0	0	1.9	0.8	0.8
V2XO	12	V	500	1	0	0	2.7	0.3	-2.7
WPKD	00	V	500	7	0	0	5.0	2.2	1.3
WPKD	12	V	500	8	0	0	3.1	0.9	-1.1
ZCBP6	00	V	500	5	0	0	3.1	0.4	1.5
ZCBP6	12	V	500	6	0	0	4.2	1.2	0.0
03953	00	V	500	27	0	0	4.5	-0.3	1.0
03953	12	V	500	27	0	0	3.9	0.2	0.1
04018	00	V	500	29	0	0	5.3	0.1	0.3
04018	12	V	500	27	0	0	4.6	1.3	-0.1
04220	00	V	500	25	0	0	3.9	0.9	0.2
04220	12	V	500	28	0	0	4.1	0.6	0.3
04270	00	V	500	29	0	0	4.2	-0.6	0.6
04270	12	V	500	29	0	0	3.9	-0.1	-0.3
04339	00	V	500	29	0	0	5.6	0.4	-1.6
04339	12	V	500	29	0	0	6.0	0.9	-0.7
04360	00	V	500	23	0	0	5.1	-1.0	0.0
04360	12	V	500	27	0	7	8.0	-2.0	1.2
08001	00	V	500	27	0	0	3.7	0.1	-0.1
08001	12	V	500	28	0	0	2.8	-0.5	0.2
08508	00	V	500	7	0	0	4.0	0.8	-0.7
08508	12	V	500	14	0	0	3.5	0.1	-0.8
08522	00	V	500	29	0	0	4.5	0.4	-0.6
08522	12	V	500	29	0	0	4.9	-0.8	0.8
08594	12	V	500	22	0	100	3.9	-0.7	-0.7
60020	00	V	500	27	0	3	5.5	-1.4	-0.2
60020	12	V	500	24	0	0	3.7	0.6	0.5
71600	00	V	500	29	0	0	4.4	-0.4	-0.6
71600	12	V	500	27	0	0	4.8	-0.7	0.5
72201	00	V	500	29	0	0	3.2	-0.9	-1.2
72201	12	V	500	29	0	0	4.2	-0.8	-1.2
72402	00	V	500	29	0	0	2.8	0.7	-0.6
72402	12	V	500	29	0	0	3.1	0.2	-0.2
74494	00	V	500	25	0	0	3.3	0.1	1.1
74494	12	V	500	26	0	0	3.8	0.1	1.0
78016	00	V	500	28	0	0	4.8	0.5	0.3
78016	12	V	500	29	0	0	4.7	0.1	0.3

APPENDIX I

1. The gross error limits for observation minus background differences of geopotential height in Tables 5, 10 and 11 are:-

Level (hPa)	Geopotential height (metres)
1000	100
850	100
700	100
500	150
400	175
300	200
250	225
200	250
150	275
100	300
70	375
50	400
30	450

The weighted RMS values used in Table 5,10 and 11 are calculated using the following weights:-

Level (hPa)	Weight
1000	3.70
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

2. The gross error limits for observation minus background differences of windspeed in Tables 6,12 and 13 are:-

Level (hPa)	Windspeed m s^{-1}
1000	35
850	35
700	40
500	45
400	50
300	60
250	60
200	50
150	50
100	45